

Thermodynamic and Kinetic Data for Macrocycle Interaction with Cations and Anions

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I. Introduction

The cation-macrocycle portion of this review was treated in two earlier *Chemical Reviews* articles (1974¹ and 1985²). The present review updates this material and includes data which were inadvertently omitted earlier. In general this review does not repeat the data included in the earlier reviews. An important feature of the present review is the inclusion of data for the interactions of macrocycles with anions. Particular effort has been made to include literature from the USSR, Eastern Europe, and the Peoples Republic of China.

As with the earlier reviews, the most important part of this review is considered by the authors to be the data compilation. Thermodynamic and kinetic data are

brought together and made available to workers in the field. These data provide a quantitative base for understanding the effect of macrocycle and guest parameters on the thermodynamic and kinetic stabilities of the resulting complexes. In turn, this understanding can lead to the intelligent design of new macrocycles and to predictions of their effectiveness in forming complexes of desired stabilities with guest species. It is apparent from the increase in the data available since the 1985 review and in the large number of citations of this review³ that these data are valuable to workers in the field.

Several reviews containing compilations of some thermodynamic and/or kinetic data for cation-macrocycle interaction have been published since the 1985 review. Anion-macrocycle interaction was not covered in the 1985 review. Partial reviews of anion-macrocycle interaction have been published. Reviews covering both anion and cation interaction are now listed together with the major areas of emphasis in each case.

(1) K. B. Yatsimirskii and Ya. Lampeka, *The Physicochemistry of Metal Complexes with Macrocyclic Ligands*; 1985 (Russian).⁴ The book contains general information on metal-macrocycle complexes including structures based on X-ray data, geometry, spectroscopic and magnetic properties of transition metal complexes, thermodynamics (chapter 5), and kinetics (chapter 6). The emphasis is on the interaction of transition-metal complexes with nitrogen-containing macrocycles. The literature appears to be covered through 1982 with some 1983 references. The review contains USSR work in this field.

(2) J.-C. G. Bünzli, "Complexes with Synthetic Ionophores", 1987.⁵ This article is limited to rare earth-macrocycle interactions. Tables of thermodynamic and kinetic data are given. Applications of macrocycles and their complexes as spectroscopic probes, in bio-inorganic chemistry, and in separation, extraction, and analysis are also discussed.

(3) E. I. Sinyavskaya, "Alkali and Alkaline Earth Metal Complexes with Phosphorus-Containing Ligands with Cyclic and Pseudocyclic Structures", 1986.⁶ This article compiles and reviews equilibrium constants for the interaction of alkali and alkaline-earth-metal ions with cyclic and pseudocyclic phosphorus-containing ligands in nonaqueous solvents. There are 55 references about one-half of which are Russian.

(4) H.-J. Buschmann, "Thermodynamic and Stereochemical Aspects of the Macrocyclic and Cryptate



Reed M. Izatt was born in Logan, UT. He received his B.S. degree at Utah State University in 1951 and his Ph.D. degree in 1954 with Professor W. Conard Fernelius in coordination chemistry at The Pennsylvania State University. After 2 years of postdoctoral work at Carnegie-Mellon University, he joined the Brigham Young University Chemistry Department in 1956. He delivered the Annual Sigma Xi lecture at BYU in 1966 and the Annual BYU Faculty Lecture in 1970. He was BYU Teacher of the Month in October 1974. He received the BYU Karl G. Maeser Research and Creative Arts Award in 1967 and was the recipient of an NIH Career Development Award (1967–1972), the Utah Award (American Chemical Society) in 1971, the Huffman Award (Calorimetry Conference) in 1983, the Willard Gardner Award of the Utah Academy of Sciences, Arts, and Letters in 1985, and the State of Utah Governor's Medal in Science in 1990. He is a Fellow of the American Association for the Advancement of Science and is Chairman of the Organizing Committee for the annual International Symposium on Macrocyclic Chemistry. His research interests include the design of novel molecular recognition systems for the selective separation of cations, anions, and neutral species; calorimetry applied to metal–ligand and nonelectrolyte interactions, particularly at elevated temperatures and pressures; and the compilation of thermodynamic data.



Krystyna Pawlak was born in Lithuania and received her M.D. degree at the Medical Academy in Gdansk, Poland in 1964. She obtained her specialization in psychiatry at the Medical Academy in Gdansk and at the Institute of Neurology and Psychiatry in Warsaw. After five years of practicing medicine at the State Psychiatric Hospital, she served as a Director of the Outpatient Clinic for Alcoholics and Drug Addicts in Gdansk where she did research on pharmacodynamics of drugs used in the treatment of alcoholics. From 1973 to 1986, she was a consultant in the Outpatient Psychiatric Clinic in Gdynia and a sworn expert for the court. She was a member of the Polish Psychiatric Society. In 1981–1982, she was an observer in The Tower Hospital in Leicester, England. In 1986, she joined the chemistry research group at Brigham Young University. Her recent interests are in researching the known literature on the thermodynamics of macrocycle and cyclodextrin interactions with cations, anions, and neutral molecules and the compilation of thermodynamic data.

Effects”, 1987.⁷ Several tables of thermodynamic (K , ΔH , ΔS) data are given on the interaction of various macrocycles with alkali-, alkaline-earth-, transition-, and heavy-metal cations. The data relate to macrocyclic and



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cryptate effects. No effort is made to have a comprehensive review. There are 149 references, many of them were published in 1985 and 1986.

(5) L. F. Lindoy, “Heavy Metal Chemistry of Mixed Donor Macrocyclic Ligands: Strategies for Obtaining

Metal Ion Recognition", 1987.⁸ Several tables of thermodynamic and kinetic data are given. The data are limited to the systems mentioned in the title. There are 68 references, many of which refer to unpublished work by Lindoy.

(6) A. V. Bajaj and N. S. Poonia, "Comprehensive Coordination Chemistry of Alkali and Alkaline Earth Cations with Macrocyclic Multidentates: Latest Position", 1988.⁹ This large review deals with the interaction of crowns and crown-related macrocycles with alkali and alkaline earth cations, in solid state and in solution. Properties, equilibrium constants, kinetics and applications are discussed. Few K values are given, but the authors refer to many works containing thermodynamic and kinetic data. There are 971 references; many of them were published in 1984–1986.

(7) B. Dietrich, "Cryptate Complexes", 1984.¹⁰ The review deals with macrobicyclic, macrotricyclic, and macrotetracyclic mono- and dinuclear cryptates. Ten tables with K , ΔH , and ΔS are given. There is also a paragraph on anion complexation with limited K data. 334 references and 11 reviews are cited.

(8) M. I. Kabachnik and Yu. M. Polikarpov, "Steric Aspects of Coordination of Polyphosphoryl Ligands and Selectivity of Complexing with Metals", 1988.¹¹ Organophosphorus reagents, including phosphoryl and polyphosphoryl complexones, and extracting agents are discussed. Among them polyazacycloalkanes with carboxylic and phosphorus pendent groups are reviewed. There are tables with stability constants of mononuclear and binuclear (homo- and heteronuclear) complexes. The review contains USSR work in this field.

(9) J.-L. Pierre and P. Baret, "Molecular Complexes of Anions", 1983.¹² The review (63 refs) compiles equilibrium constants for the interaction of noncyclic, macrocyclic and cyclodextrin hosts with inorganic and organic anions.

(10) E. Weber, "New Developments in Crown Ether Chemistry: Lariat, Spherands, and Second-sphere Complexes", 1989.¹³ Recent achievements in organic complex chemistry such as numerous lariat ("rope-and-tie" complexation), spherand (preorganized ligand complexation) and "second-sphere" complexes with 155 references are presented. Tables with thermodynamic and limited kinetic data are included.

Additional reviews are available on cation interaction with macrocycles,^{14–23} cation and anion interaction with macrocycles,^{24–28} azacyclophane-type macrocycle-ion interaction,^{29,30} calixarene synthesis, applications, and interaction with ions,^{31,32} the use of molecular mechanics as a predictive device for cation-macrocycle interaction,^{33,34} the use of NMR in the study of ion-molecule interaction in solution,^{35,36} and possible macrocycle applications.^{37,38} In a recent book, a summary of new developments in bifunctional chemistry in Japan is given³⁹ with the majority of the articles involving the incorporation of macrocycles into supramolecular assemblies. No review articles on kinetics have been published, in addition to those in the 1985 review.² However, several of the reviews cited above include limited summaries of kinetic data.

The compilation of thermodynamic ($\log K$, ΔH , ΔS , ΔCp) and kinetic (k_f , k_d , ΔH^\ddagger , ΔS^\ddagger) data is intended to be exhaustive. Included in the tables are data for the

interaction of a wide variety of macrocycles with inorganic and organic cations and anions. The reactions have been studied in a variety of solvents and under a variety of experimental conditions. The experimental conditions and some supplementary information are provided for each interaction listed. It is important to realize that the data are valid only at the specific conditions given. Few studies have been made at temperatures outside of the 20–30 °C range. The solvents used include H₂O (D₂O), various nonaqueous solvents, various solvent mixtures, molten salts (two papers^{40,41}), and liquid crystals (one paper⁴²). There is one paper⁴³ involving gas-phase interaction of H₃O⁺ with 15C5-1 and 18C6-1 and of CH₃OH₂⁺ with 12C4-1, 15C5-1, and 18C6-1. The abbreviations used in the tables can be understood by reference to the structures and names given in Charts I–LXXX (macrocycles), Chart LXXXI (organic cations), and Charts LXXXII and LXXXIII (organic anions). The chart in which each macrocycle is located is indicated in the tables. The nomenclature used is defined in the charts.

In the 1985 review,² emphasis was placed on the delineation and discussion of the cation parameters which affect macrocycle-cation complex stability. The reader is referred to that review for a discussion of these parameters. In this review, emphasis will be placed on the following: first, a presentation and discussion of the expansion of the field with emphasis on the large numbers of new macrocycles synthesized and characterized and their often unique ion complexation properties; second, the extension of thermodynamic and kinetic studies to a wide variety of cations and anions; third, the identification and investigation of factors which have enabled workers to discriminate selectively among similar ions; and fourth, practical applications of macrocycles.

II. Thermodynamics of Cation-Macrocycle Interaction

Table I contains $\log K$, ΔH , and ΔS data for the interaction of macrocycles and related ligands with cations. The method used to determine $\log K$ is given in each case. The method used to determine ΔH is given only if it is different than that used to determine $\log K$. In these cases, the method is placed in parentheses immediately after the ΔH value. The medium (solvent, supporting electrolyte) used in each determination, the temperature of measurement, some supplementary information (equation), and the literature reference are given, also.

A. New Compounds

A comparison of Table I with the 1985 review² shows that a very large number of new macrocycles has been prepared and characterized in the past few years with respect to their interactions with cations and anions. It should be realized that many more macrocycles have been synthesized, but not characterized with respect to their thermodynamic and kinetic properties. Many of the macrocycles in Table I are simple modifications of those in the earlier review. However, the majority of the new compounds represent creative and focused efforts to design molecules which will have particular uses. The exciting aspect of this chemistry is that in

the majority of the cases, the molecules meet the design criteria very well. It is evident that in an increasing number of cases the driving force behind the synthetic effort is the desire to create a molecule which will enable the user to make a specific application. In the material which follows, several examples of such applications are given and discussed. The reader will find additional examples by studying the data in Table I.

1. Large Polyazacycloalkanes

Polyazamacrocycles and their complexation properties have been presented in the previous review² but at that time only macrocycles with smaller rings, mostly tetraazacycloalkanes, had been prepared. The "large polyazacycloalkane" term was introduced in recent years by Bencini, Paoletti, Micheloni, Bianchi, and co-workers to describe cyclic polyamines having more than six nitrogen donor atoms.^{810,826,830} These macrocycles have several unusual features: (i) they are polybases producing highly charged protonated species in solution in the neutral pH range that could serve as model reagents for the study of nucleotide complexation; (ii) they are suitable for anion-coordination studies; (iii) owing to the large number of donor atoms, they can form polynuclear metal complexes which could prove useful in the search for more effective catalysts.

These polyazamacrocycles behave as relatively strong bases in their first protonation steps and as weaker bases in the last protonation steps.⁸²⁶ This grouping of the basicity constants is typical of azamacrocycles and has been explained in terms of charge-repulsion effects.^{222,283} In the case of large azamacrocycles, the positive charges that accumulate in the cyclic framework as the degree of protonation increases experience weaker repulsions than those that accumulate on smaller macrocycles. Thus, the difference between the two groups of basicity constants is much smaller for large azamacrocycles.^{762,801,810,826,830} Anion coordination by polyazacycloalkanes will be discussed in section III which deals with anion complexation.

The possibility for these polyazamacrocycles to bind more than one metal ion in the macrocyclic framework has aroused the interest of several research groups. The work to date has been limited to the first row transition elements, Zn²⁺ and Cd²⁺. Since second and third transition series elements are important as catalysts and since several of these elements have large affinities for nitrogen, it is likely that future work may involve them. In general, large polyazacycloalkanes can form mono-, di-, and trinuclear (with copper) species, as well as polyprotonated and hydroxo complexes. The dinucleating and trinucleating abilities of these ligands increase as ring size increases. Mononuclear and dinuclear complexes are formed by Cu(II) only with [21]aneN₇ (A₇21C7-1); by Ni(II), Zn(II), and Cd(II) only with [24]aneN₈ (A₈24C8-1); and by Co(II) only with [27]aneN₉ (A₉27C9-1). All macrocycles with rings larger than these form only binuclear complexes with these specific metal ions. In addition, Cu(II) forms both binuclear and trinuclear species with [33]aneN₁₁ (A₁₁33C11-1) and [36]aneN₁₂ (A₁₂36C12-1).⁸³⁰ The general trend of stability of binuclear complexes is Co²⁺ < Zn²⁺ < Ni²⁺ < Cu²⁺.⁷⁶⁵ Co₂L⁴⁺ type complexes with [30]aneN₁₀ (A₁₀30C10-1), [33]aneN₁₁ (A₁₁33C11-1), and [36]aneN₁₂ (A₁₂36C12-1) predominate over a rather

wide pH range which is a favorable condition for study of O₂ uptake.⁷⁶⁵ The stability of mononuclear complexes of Ni(II) with azacycloalkanes increases from [9]aneN₃ (A₃9C3-1) to [18]aneN₆ (A₆18C6-1), and then decreases for [21]aneN₇ (A₇21C7-1) and [24]aneN₈ (A₈24C8-1).⁷⁶⁶ Crystallographic data show that Ni(II) is coordinated by six of the nitrogen atoms of [21]aneN₇ (A₇21C7-1). The fact that only the monoprotated form of Ni-[21]aneN₇ (A₇21C7-1) is present in solution supports this idea.⁷⁶⁶ Calorimetric investigation of binuclear complexes of Cu(II) with polyazacycloalkanes shows that the formation reaction enthalpies are more exothermic as the overall size of the macrocycles increases.^{810,826} Two effects can explain this trend: (i) the increase in the number of donor atoms involved in the coordination to the metal ions and (ii) the increase in ligand flexibility and decrease of the electrostatic repulsions between the metal ions coordinated to the larger macrocycles. It is rare for Zn(II) to form binuclear complexes in aqueous media, but large polyazacycloalkanes do form stable binuclear zinc(II) complexes.⁷²⁵ The similarity between the stabilities of Zn(II) and Cd(II) binuclear complexes suggests the possibility of obtaining mixed complexes of these two metals. Manganese(II) forms a stable complex (log *K* = 9.79) with [21]aneN₇ (A₇21C7-1) which preserves Mn(II) ion from air oxidation, even in alkaline solution.⁷⁶⁴ The absence of protonated complexes with this macrocycle suggests the heptacoordination of the ligand to Mn(II). The absence of protonation is supported by the crystal structure of MnL(ClO₄)₂. The asymmetric unit contains two independent MnL²⁺ complexed molecules in which each Mn(II) is heptacoordinated by [21]aneN₇ (A₇21C7-1) whose nitrogen atoms are located at the vertices of an irregular polyhedron.

2. Azacyclophane-type Macrocycles

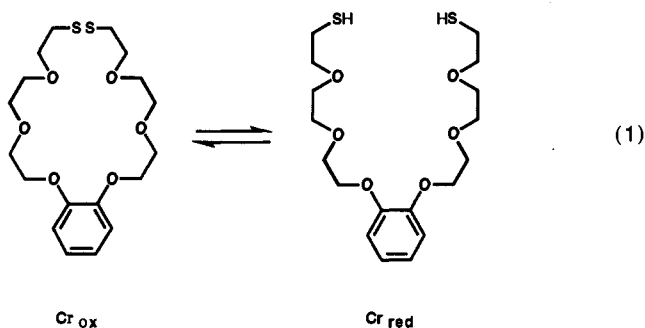
Azacyclophanes, macrocycles with cyclophane subunits incorporated into the ring, have sizable internal cavities and are able to interact with neutral molecules,^{988,989} cations,^{817,831} and anions^{990,991} through hydrophobic host-guest interactions which are scarcely affected by external factors such as pH, temperature, and ionic strength. Examples of azacyclophanes are found in Charts LV-LXII, LXXVIII, and LXXIX. A novel azacyclophane consisting of diphenylamine and piperazine skeletons was synthesized and was found to be an effective ligand for alkali metal and ammonium cations, i.e., the log *K* (CHCl₃) value for Li⁺ interaction is 8.06. This ligand is effective in the selective extraction of Li⁺ from H₂O to CHCl₃. CPK molecular models showed that the cavity of this ligand is too large to include the bare Li⁺, but Li(H₂O)₆⁺ could fit into the cavity forming hydrogen bonds with piperazine moieties and two molecules of the coordinated water.⁸¹⁷ Macrocycles consisting of crown ether and cyclophane subunits and having properties of both crown ethers and cyclophanes have been synthesized.^{668,818,847} Attachment of long alkyl branches on the macrocycle skeleton provides a deeper cavity and allows the introduction of catalytically active groups not only into the cyclic skeleton but also into each alkyl chain. These properties of azacyclophanes as well as their high substrate specificity due to their intrinsic geometrical requirements for host-guest interactions give them the potential to be superior enzyme models.²⁹

3. Reversible Switching Phenomena

The term "reversible switching" is used to describe the situation where metal complexation is induced or changed significantly in a metal-macrocycle system by altering a property of the system. This behavior may be important in developing models of biochemical reactions where reversible switching occurs. There are many possibilities for the introduction of this behavior into chemical systems. Five of these will be used here to illustrate the effect.

a. Electrochemical Response. Gokel and co-workers^{337-339,400} have used cation binding by neutral and reduced forms of one- and two-armed carbon- and nitrogen-pivot lariat ethers to demonstrate electrochemical switching (i.e., 15C5-22 in Chart VIII and A15C5-24 in Chart XII). In these macrocycles, the lariat ether side arm contains a terminal phenyl substituent. The phenyl group contains an NO₂ substituent which can be reduced to the corresponding anion radical. The affinity of this anionic macrocycle for cations is much larger than that of the neutral ligand. Cation stability enhancement was found when the nitro group was in the ortho position, but not when it was in the para position. Binding of the cations was enhanced 15- to 13000000-fold upon electrochemical reduction.³³⁷ Both cation-binding enhancements and cation-binding selectivities are possible in these electrochemically switched systems by appropriate modifications of the macrocycle.

b. Redox-Responsive Macrocycles. If the ring conformation or the topological ring shape can be reversibly changed in response to some input of energy, the ion-binding ability and ion selectivity of the system can be "controlled" by an on-off switch. Beer⁹⁹² and Shin-kai^{711,759} with co-workers have studied such systems. In each case the interconversion between these two forms was effected by treatment with redox reagents. For example, in one of these systems ($\text{Cr}_{\text{ox}} \rightleftharpoons \text{Cr}_{\text{red}}$),⁷⁵⁹ the "ox" form has the highest selectivity for Cs⁺. The "red"



form scarcely binds metal cations. The rate of Cs⁺ transport across a liquid (CHCl₃) membrane was regulated by the interconversion between "red" and "ox" in the membrane phase. The form "ox" carried Cs⁺ 6.2 times faster than "red". These results suggest that the redox-functionalized ionophores provide novel applications of ion extraction and ion transport.

c. Photo-Responsive Macrocycles. Shinkai and co-workers^{515,815,993-995} have studied macrocycle systems in which trans isomers were isomerized by UV light to the cis isomers. The cis isomers were isomerized thermally and, in some cases also by visible light to the trans

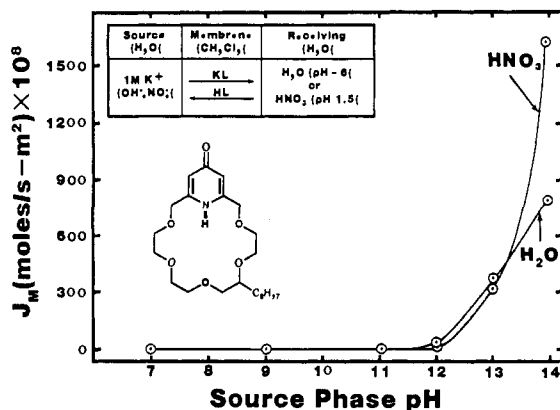
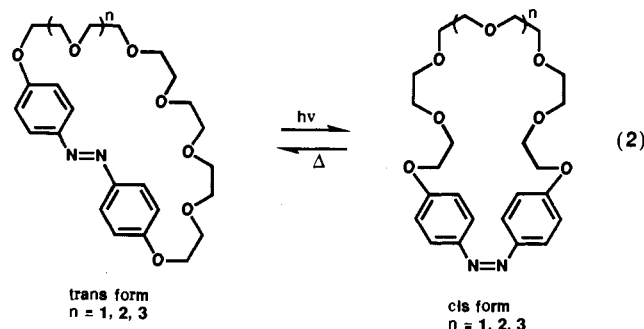


Figure 1. A plot of K⁺ flux, J_M (mol/s m²) × 10⁸, from a 1.0 M K⁺ source phase in a bulk H₂O/CH₂Cl₂/H₂O liquid membrane system as a function of initial source phase pH and initial receiving phase pH using pyridono-18-crown-6 with an octyl substituent.

isomers, the interconversion being completely reversible. This mechanism is illustrated by the azacyclophane type macrocycles with 29-, 32-, and 35-membered rings.⁸¹⁵ The cis form showed spheric recognition



patterns in the binding of alkali metal cations, typical of those found for crown ethers in solution. The trans form showed a total lack of affinity for metal ions. The result is in accord with the prediction by CPK models, that the polyoxyethylene chains of the trans isomers are linearly extended, whereas those of the cis isomers form crown-like loops. The ion selectivity of the cis isomers correlates well with that in solvent extraction, that is, the cis form behaves like a crown ether.

d. pH-Responsive Macrocycles. Turning cation transport through liquid membranes on and off using ionizable macrocyclic carriers has been achieved by several workers. In these studies, the ionizable proton was attached either to a group exterior to the macrocycle ring of donor atoms,^{92,470,800,996-998} to an atom that extends from the macrocycle such as in the case of calixarenes,^{999,1000} or to one of the ring donor atoms.^{266,1001,1003} An example of the use of pH to control cation transport is seen in Figure 1. A pyridono-18-crown-6 with an octyl substituent transports alkali-metal cations from MOH solutions by a proton-coupled mechanism in which no coanion is transported. In these cases, alkali-cation transport increases exponentially with increasing source phase pH above pH 12. Generally, alkali-cation transport at source phase pH 14 is higher when nitric acid is present (receiving phase pH = 1.5) than when it is absent. In competitive transport experiments involving K⁺ and one other alkali cation M⁺, K⁺ is transported selectively over M⁺ 4.6- (Na⁺),

2.7- (Rb⁺), or 6.3- (Cs⁺) fold when the source and receiving phase pH values are 14 and 7, respectively.^{1002,1003} Selective transport of Li⁺ over other alkali cations in competitive experiments is obtained by using a pyridono-15-crown-5 macrocycle. This selective transport is switched "on" or "off" by altering the pH of the source phase and is enhanced by altering the receiving phase.¹⁰⁰¹ These results are consistent with the reported p*K* (H₂O) value of 10.98 for the analogous compound in which R = H.⁶⁷⁵ No transport is observed until the pH exceeds this p*K* value.

e. Temperature Switches. Temperature can be used to effect molecular switching by using a thermodynamically discontinuous system. For example, the compound CH₃CH₂—[1,4-C₆H₄]₂—CH=N—[1,4-C₆H₄]₂—(CH₂)₃CH₃ shows a crystal–nematic liquid crystal phase transition at room temperature (*T*_{KN} (304 K)). Above the transition temperature, the liquid crystal phase is fluid. This phase transition phenomenon was used by Shinkai and his colleagues.⁹⁹³ They prepared ternary composite membranes composed of this compound, polycarbonate, and amphiphilic crown ethers. Above *T*_{KN}, K⁺ transport was very fast owing to the high fluidity of the compound, presented above, which formed a continuous phase in the membrane. Below *T*_{KN}, on the other hand, the rate of K⁺ transport was efficiently suppressed, indicating that carrier-mediated K⁺ transport is directly affected by the molecular motion of the liquid crystal phase. When the amphiphilic crown ethers formed phase-separated aggregates, K⁺ transport was suppressed completely below *T*_{KN}.

The basic idea of the controlled ion-transport systems is very similar to that used in biological transport experiments. Ion transport controlled by stimuli like light, temperature, magnetic (or electric) field, etc. due to clean energy sources would be superior to pH, redox reagents, etc.⁹⁹³

4. Chromogenic Macrocycles

The idea of designing crown ether dyes which have chromogenic functional groups within the molecules and are able to serve as photometric reagents selective for alkali-metal and alkaline-earth cations arose over a decade ago.¹⁰⁰⁴ During the 1980s, a substantial number and variety of these compounds have been prepared.^{38,1005} In these compounds, the chromogenic groups bear a dissociable proton (or protons) and the ion exchange between the proton and appropriate metal cations causes the color change.^{274,709,1005} The chromogenic groups can also be uncharged. In this case, both the electron donor and acceptor are within the chromogenic crown ether dye and the metal cation coordinated to either the donor or acceptor site induces a change in the charge transfer band of the dye.^{38,1006-1008}

Among the chromogenic macrocycles synthesized, one can find those which are useful for selective extraction of cations and for determining cation concentration at the ppm level, e.g. Li⁺,^{275,401} Na⁺, and K⁺.^{340,341,1004} Takagi and co-workers synthesized chromogenic macrocycles which are selective for Ca²⁺ and extract other alkaline earth cations in the order Ca²⁺ > Sr²⁺ > Ba²⁺ >> Mg²⁺.⁷⁰⁹ Kaneda and co-workers synthesized chromogenic macrocycles and developed a sensitive spectrophotometric method for their use in the colorimetric determination of Rb⁺ and Cs⁺.²⁷⁴ The same group of

scientists reported the first examination of amine selective⁸⁸ and enantiomeric amine selective^{88a} coloration properties of chromogenic macrocycles.

Recently, creativity in chromogenic macrocycle synthesis has expanded. New spherand species have been synthesized which act as highly preorganized chromogenic specific indicators for Li⁺ and Na⁺,⁴⁹⁵ and an azophenol dye has been prepared with "perfect" selectivity for Li⁺.⁴⁴⁰ Chromogenic hemispherands and cryptahemispherands have found commercial use as Na⁺ and K⁺ assays in body fluids.^{756,1009} In addition, chromogenic cryptands have been reported which exhibit spectrophotometric sensitivity to the presence of Na⁺ and K⁺.⁹⁰⁹

Many of these chromogenic macrocycles have already found practical applications in chemical and biochemical studies, in medicine and in industry. Further study in this field would be fruitful and rewarding.

5. Preorganized Macrocycles

The principle of preorganization is that the log *K* for host–guest complex formation is increased significantly, if the host and guest are organized for binding and have low solvation prior to complexation.⁴⁹⁶ This principle was experimentally demonstrated with the synthesis of spherands designed to complex selectively with Li⁺ and Na⁺ cations.⁴⁹⁴ The very high negative values for the free energy of complexation can be attributed to three factors.⁵⁰³ First, because of the rigid molecular framework the host does not undergo the conformational changes upon complexation that generally lower the stabilities of complexes with flexible macrocyclic hosts. Second, as a consequence of the preorganization of the rigid host, repulsive forces between electronegative binding sites cannot be minimized by conformational changes in the noncomplexed host. Upon complexation of an electron-deficient guest, these repulsive forces are converted into attractive forces between host and guest. Third, the methoxy groups prevent solvent molecules from entering the cavity. Therefore, the binding sites do not have to be desolvated during complexation. Expansion of the preorganization idea has resulted in the creation of a large variety of new macrocycles. Along with spherands, Cram and co-workers synthesized the (crypta)hemispherands, compounds in which at least half of the binding sites are preorganized during synthesis, but some parts of which must undergo conformational reorganization during complexation.^{496,504,1010} Incorporation of steric barriers into the bridging *m*-xylylene units results in hosts which discriminate in binding CH₃NH₃⁺ and *t*-C₄H₉NH₃⁺ by up to 2.5 kcal/mol (ΔG).⁷⁴⁹ Preorganized macrocycles with incorporated biphenyl moieties are good candidates for studies of chiral recognition in complexation and catalysis.⁴⁷⁵ Hemispherands can be rigidified further by incorporating extra bridges which sometimes contain additional binding sites.^{497,502,938} Preorganized hosts have been prepared which mimic serine transacylases.^{751,771} Alkali-metal cations bind tightly and rapidly to an exceptionally rigid, open cavity of a torand (Chart XXXVI), proving that encapsulation is not required for strong binding, log *K* is 14.7 and 14.3 for Na⁺ and K⁺, respectively, in CDCl₃ saturated with D₂O.⁷²⁸ Cyanospherands built of 4-methylcyanobenzene units showed that the intrinsic ligating ability of the CN

group is higher than that of the ether oxygen.⁷⁷⁷ Interactions between the macrocycles mentioned above and many other preorganized hosts with alkali-metal, ammonium, and alkylammonium cations have been studied. The majority of preorganized macrocycles form very stable complexes with targeted cations in at least some solvents, and part of them show significant selectivity.⁵⁰⁴ Arrangement of hosts in decreasing order of their degree of preorganization results in the same order as that observed when the same hosts are arranged in decreasing order of their $-\Delta G^\circ$ values, i.e., binding strength decreases in the order spherands > cryptahemispherands > cryptands > hemispherands > chorands > podands > solvent.^{504,1011}

6. Calixarenes

The term "calixarene" was introduced by Gutsche¹⁰¹² to describe a homologous series of macrocyclic phenol-formaldehyde condensates. It originates from the observation that, in molecular models, the tetrameric members of the series have a chalice-like or cup-like appearance. Calixarenes are mainly receptors for small neutral molecules, but they also interact with cations if the solutions are sufficiently basic to permit deprotonation of the phenolic groups.^{999,1000} Alkali-metal cations can be transported as neutral phenoxide complexes through a chloroform liquid membrane with a selectivity pattern for the octamer of $\text{Cs}^+ > \text{Rb}^+ > \text{K}^+ > \text{Na}^+ > \text{Li}^+$.⁴⁴⁹ The peak selectivity for 1:1 complexation by Na^+ displayed by most tetramers, as well as the plateau selectivity displayed by the hexameric compounds for the alkali cations larger than K^+ are in agreement with the structural and phase-transfer properties of the free calixarenes, and provide evidence for the correlation of hydrophobic cavity diameter and cation diameter.⁴⁵⁰

Bridged calixarenes in which structural features of calixarenes and spherands are combined have been prepared by Reinhoudt and co-workers.⁷⁵⁷ These novel compounds exhibit high binding ability for alkali cations (i.e., $\log K = 12.32$ for the Na^+ -bridged calix-4, Chart LXXVI, interaction in CDCl_3 saturated with D_2O) due to a high degree of preorganization and the highly hydrophobic collar around the molecular cavity which prevents solvent molecules from assisting in the decomplexation process.

The interaction of calixarenes and amines in acetonitrile is postulated to involve a two-step process, viz., proton transfer from the calixarene to the amine to form the ammonium cation and the calixarene anion followed by the association of these ions to form a complex. The larger contribution to the overall association constant arises from proton transfer, and the smaller from the association of the ions.⁴⁴⁸

Hexasulfonated calix[6]arenes form stable complexes with arenediazonium salts in aqueous systems where neither 18-crown-6 nor anionic micelles are effective. This specific stabilization effect is due to the strong anionic field brought about by six sulfonate groups arranged on the edge of the calixarene cavity.^{443,773}

Calixarene complexes with UO_2^{2+} as synthesized and examined by Shinkai and co-workers exhibit very high stability and selectivity. It was found that the selectivity factor for UO_2^{2+} by these calixarenes (penta- and hexamers) is large, 10^{12} to 10^{17} in basic aqueous solution,

as compared with competing Ni^{2+} , Zn^{2+} , and Cu^{2+} . These authors attribute the selectivity to the moderately rigid skeleton of these ligands which can provide the preorganized hexa- or pentacoordination geometry for the binding of UO_2^{2+} but cannot adopt the square-planar or tetrahedral coordination geometry required for other metal cations in an "induced-fit" manner. In this case, "coordination-geometry selectivity" better explains high selectivity than "hole-size selectivity".^{443,444} In other cases, molecular recognition and selectivity by calixarenes toward cations can be predicted (to some extent) on the basis of "hole-size selectivity".^{443,447} It should be noted, however, that deprotonated phenolic-containing ligands (including nonmacrocy-cles) have an inherent selectivity for UO_2^{2+} over other bivalent cations.¹⁰¹³

Water-soluble calixarenes serve as a new class of catalysts, surfactants, complexers for neutral compounds, absorbents for heavy metals, ionophores (i.e., for recovering cesium from radioactive wastes¹⁰¹⁴), uranophiles for uranium extraction from sea water, and selective electrodes.³¹ Industrial applications (potential or actual) include accelerators for cyanoacrylate adhesives, use in Bakelite manufacture, use as Petrolite demulsifiers, and use in heat-resistant polyimides.³¹ In addition, they have promise as artificial enzymes (i.e., an aldolase mimic), as biomimics which simulate various aspects of natural systems, as heme mimics which may reversibly bind oxygen, and as slow-release active compounds for application in agriculture and medicine.³¹

7. Other

a. Sugar-Based Macrocycles. The objective to build enzyme analogues around crown ethers as locks which can bind primary alkylammonium cations as keys and simultaneously possess the incorporated chirality and functionality necessary for chiral recognition has resulted in the synthesis of a variety of sugar-based crown ethers and cryptands.^{346,611,616-620} The use of sugar-based macrocycles in the resolution of racemates, as catalysts in enantiofacial differentiating reactions, and as ligands in ion-selective electrodes has been described.¹⁰¹⁵

b. Structurally Reinforced Macrocycles. Addition of extra bridging ethylene groups between nitrogen donors of macrocycles gives piperazine-like structures and leads to much more rigid ligands. The piperazine-like part of the macrocycle holds the macrocyclic cavity open and prevents coordination to small metal ions. The selectivity for metal ions displayed by such reinforced macrocycles is more strongly based on the match between the relative diameters of the ligand cavity and metal ion than is the case for conventional macrocycles.^{159,176} The successive insertion of ethylene bridges into the macrocycles synthesized and studied by Hancock and co-workers enabled them to enhance the selectivity of these ligands for large metal ions, e.g., $\text{A}_4\text{18C6-6}$ (Chart XXXVI) which binds only to Pb^{2+} .⁷¹⁶ It should be noted that the interaction constants for cations with piperazine relative to aza donor containing ligands are significantly decreased in many solvents.¹⁰¹⁶

c. Catenands. The first catenand-type macrocycle (Chart LXVIII) consisting of two interlocked identical macrocyclic ligands with diphenylphenanthroline subunits inserted into the ring was synthesized in 1984.¹⁰¹⁷ This catenand was found to be one of the strongest

neutral chelating agents for Cu(I).⁸¹⁹ Its complex with Cu(I) in MeCN/CH₂Cl₂/H₂O (80:10:10 v/v) solvent is not only stable but intensively colored as well. On the basis of X-ray crystallographic data, the molecular structures of the complex CuL⁺ and the free ligand differ significantly.¹⁰¹⁸ In the complex, the two diphenylphenanthroline subunits are held in close proximity by complexation to Cu(I), forming a relatively compact assembly due to interlacing of these subunits. In the free ligand, these subunits lie far apart from each other. Strong thermodynamic stabilization of the Cu(I)-catenand complex,⁸¹⁹ its kinetic inertness,¹⁰¹⁹ and the basicity of the catenand which is several orders of magnitude higher than that of its open-chain analogues⁸⁴⁸ are due to a special molecular topography of the catenand. One more macrocyclic catenand (Chart LXVIX) was synthesized in 1986¹⁰²⁰ and its kinetics with H⁺ and Cu⁺ were examined.¹⁰²¹

d. Functionalized Basket-Shaped Macrocycles. In search of new and better catalysts, Nolte and his colleagues,^{939,940} have synthesized basket-shaped macrocycles (Chart LXXVII) designed to mimic certain enzymes. These macrocycles possess a cavity or cleft with binding sites for substrates and one or more catalytic centers (often a metal center) next to the cavity. In some respects, these macrocycles resemble other basket-shaped molecules such as calixarenes and cyclodextrins. These basket-shaped macrocycles contain a rigid framework and two flexible handles forming two crown ether like receptor sites at the opposite ends of the molecule. In a CHCl₃ saturated with H₂O solvent, they form stable complexes with alkali-metal and ammonium cations as well as with aliphatic and aromatic diammonium cations. The basket handles which have proper length (not too long) fold and encapsulate the metal ions in a kind of clamshell complex. In the case of ammonium cations, all baskets exhibit the same binding order NH₄⁺ > CH₃NH₃⁺ > *t*-C₄H₉NH₃⁺. The *tert*-butyl group is probably too bulky to fit into the basket.

The two binding sites and the cavity make these ligands ideal hosts for diammonium cations. In these complexes, each ammonium group is complexed at one binding site of the macrocycle. The aliphatic chain lies in the macrocycle cavity where it is wedged in between the *o*-oxylylene groups. The flexible handles of the baskets move toward or away from each other allowing the size of the basket cavity to be adjusted to the length of the aliphatic chain of the guest. A guest with an aliphatic chain too long to be accommodated inside the basket cavity forms a complex in which the chain is folded outside the basket cavity or forms a complex in which one of the ammonium groups coordinates to one basket and the other to another basket. The stoichiometry of these complexes was determined through ¹H NMR experiments.

Currently, Nolte and co-workers are investigating the catalytic application of basket-shaped macrocycles using either zinc, copper, or rhodium as the metal center.⁹⁴⁰

e. Polycrown Ethers. Macrocycles composed of three or more crown ether subunits are depicted in Charts LXIX and LXX. Lukyanenko and co-workers prepared chiral tricrown ethers and found that the presence of asymmetric centers in the linkage which connects the polyether rings does not lead to enantioselective com-

plexing with L- and D-valine methyl ester hydrochlorides.⁸⁴⁴ Kimura, Maeda, and Shono^{135,379,380} synthesized bis- and polycrown ethers and found that they show larger extractability in water-chloroform systems for metal picrates than do the corresponding monocyclic crown ethers. The log *K* values valid in CHCl₃ for complexation of polycrown ethers with alkali metal, alkaline-earth metal, silver(I), and thallium(I) cations are higher than those of monocyclic and bicyclic crown ethers.

Different kinds of polycrown ethers containing a phthalocyanine and four crown ether subunits were synthesized in 1986 (Chart LXX).³⁵⁰ These new polytopic macrocycles form aggregates in solution and might serve in the future as multifunctional catalysts and carriers. The aggregation ability, in this case, is influenced by the cations coordinating to phthalocyanine crowns, anions, and solvents. The complexation of macrocycles containing the metal center, Cu(II), complexed by a phthalocyanine ring, with alkali-metal cations was examined. It was found that in a CHCl₃ saturated with H₂O solvent these macrocycles form 4:4 (L:M⁺) complexes with cations whose diameters match the diameters of the crown ether cavities, and form 8:4 (L:M⁺) complexes, when the cation diameters are larger than those of the crown ether cavities. In determining the stoichiometries, each crown ether subunit is counted as a separate ligand. The log *K* values in the same solvent for formation of complexes are higher than those for monocyclic analogues.^{350,850} log *K* values in a CHCl₃ saturated with H₂O solvent are also presented for complexes of alkali-metal cations with phthalocyaninato polysiloxanes substituted with crown ether moieties (Chart LXX) which are related to those described above and which are synthesized by the same group of scientists.⁸⁵¹

f. Macrocycles with Organophosphorus Pendants. Incorporation of phosphonic groups instead of carboxyl groups in side arms of azacrown ethers with 9-, 12-, and 14-membered rings (A₃9C3-7, A₄12C4-6, and A₄14C4-11) increases selectivity and stability of the complexes of these macrocycles with alkaline earth, transition metal, and La³⁺ in comparison with their carboxylic analogues.^{11,71,72,171,241} Regardless of the cation used, the binding strength order of the macrocycles is A₄12C4-6 > A₃9C3-7 > EDTA > A₄14C4-11, but the selectivity order is A₄14C4-11 > A₄12C4-6 > A₃9C3-7 > EDTA.¹¹ Ligand A₃9C3-7 is the most selective for Mg²⁺, Zn²⁺, and Fe³⁺,⁷¹ A₄12C4-6 for Cu²⁺, Hg²⁺, and La³⁺,¹⁷¹ and A₄14C4-11 for Cu²⁺.²⁴¹ The organophosphorus macrocycles have an additional important feature, they form mono binuclear and hetero binuclear complexes with metal cations.^{11,73}

g. Macrocycles Which Form "Cascade" Complexes. Polynuclear metal complexes and anion coordination which are found in large polyazacycloalkanes are also seen in several other macrocycles, i.e., A₆24C8-1 (Chart LII) and its cryptand analogue A₆[3.3.3]-1 (Chart LXXIII) synthesized by Lehn in 1977,¹⁰²² and the cryptand related to the latter but without the bridging oxygens, A₆[2.2.2]-2 (Chart LXXII).¹⁰²³ Martell and Lehn and their colleagues examined the complexation properties of these macrocycles and found that they form both mono- and binuclear complexes with first-row transition-metal cations.^{799,800,917,923-925,927} Binuclear

complexes are more stable than mononuclear and they in turn become themselves the hosts and bind secondary anions as a bridging group. This secondary bridging type of anion binding has been named "cascade" complex formation by Lehn.¹⁰²⁴ In addition, binuclear complexes of Co(II) with A₆24C8-1 and A₆[3.3.3]-1 coordinate oxygen and can serve as reversible dioxygen carriers for oxygen separation and transport.^{800,925}

h. Lariat Crown Ethers. The number of reported lariat crown ethers bearing one, two, or more side arms has increased dramatically in the past few years. The description of some lariat crown ethers which are relevant to the above paragraphs has been given in an earlier section. Table I contains log *K* values valid in aqueous solution for complexes of cations with a large number of macrocycles bearing pendent carboxylic acid functions. Carboxylate groups bind avidly to metal cations, i.e., A₄12C4-4 forms with lanthanides in an aqueous solution the most stable lanthanide complexes known so far (log *K* = 22.86–29.2).^{66,169} The cavity of the ligand is too small to accommodate a lanthanide cation and the ligand ring acts as a frame to constrain the nitrogen atoms and the carboxylate groups into a nearly spherical arrangement.

Numerous log *K* values valid in a variety of solvents for macrocycles having other than carboxylate side arms are also found in Table I. In general, side arms especially those containing donor groups, enhance the binding strength of lariat crown ethers toward cations in comparison with their crown ether analogues without side arms by cooperative ring and side-arm interaction.⁴¹¹ Gokel and co-workers obtained the evidence from X-ray crystallography and solution thermodynamic studies that two-armed flexible lariat ethers based on the 1,10-diaza-18-crown-6 (A₂18C6-1) system envelop Na⁺ and K⁺ cations in a three-dimensional manner displaying cryptand-like behavior.⁷⁰² The side arms without donor groups do not interact directly with ring-bound cations, but influence the binding by their interaction with the solvent.⁵³⁹ The complexation phenomena exhibited by lariat crown ethers are influenced by the hole-size relationship, ligand flexibility and conformation, total number of donor atoms, and solvation energies for the cation, macrocycle, and complex.¹⁴¹

B. Molecular Mechanics

A promising approach to macrocycle design for selective guest complexation involves the use of molecular mechanics concepts. Several reviews^{33,34,1025,1026} have been published which describe in detail the procedures used in the application of these and related concepts to macrocycle-guest interaction.

One important objective of the molecular mechanics approach is to design macrocycles which are more efficient from a steric standpoint.³⁴ Such preorganized macrocycles should accept one guest and reject others from a series where the guests are similar. Since the molecular mechanics procedure allows one to vary the numerical values of parameters in a systematic manner, information concerning the importance of and optimum values for these parameters in host-guest interactions can be obtained. It is, of course, desirable to check the predictions of the molecular mechanics calculations against experimental data.

C. Selectivities

The main target in macrocycle design is to synthesize macrocycles which are able to discriminate among the different cations. Many factors influencing the selectivities of macrocycles for cations have been determined. These factors may be roughly divided into several groups including macrocycle cavity dimensions; shape and topology; substituent effects; conformational flexibility/rigidity; and donor atom type, number, and arrangement.^{2,19,22,1027–1031}

The match between the cation and macrocyclic cavity diameters is especially visible in small cryptands and other preorganized macrocycles such as calixarenes and spherands, e.g., the small cage, A₃[1.1.1]-1, exclusively encapsulating only Li⁺,⁸⁵⁸ and the small Li⁺- and Na⁺-specific spherands.⁴⁹⁵ In these cases, size selectivity goes together with lack of flexibility of the ring which is too rigid to undergo conformational changes upon complexation. The influence of the cavity shape is envisaged in some calixarenes which exhibit very high "coordination-geometry selectivity" toward UO₂²⁺,⁴⁴³ or in the macrotricyclic cryptand, [3.3.1.1]-1 whose selectivity factor for NH₄⁺ over K⁺ is 500 although its cavity is probably too large and has to flatten slightly to accommodate the tetrahedral NH₄⁺.⁹²¹ The [3.3.1.1]-1 cryptand possesses a tetrahedral recognition site of high structural and binding complementarity toward the tetrahedral NH₄⁺. The same cryptand having a well-defined, rigid, spherical cavity with diameter ≈ 3.6 Å is almost ideal for complexing of spherical Cs⁺ with diameter 3.38–3.68 Å.^{22,934}

Macrocycles of "rigid" type (e.g., small cryptands and other preorganized macrocycles) discriminate between cations that are either smaller or larger than the one with the optimum size (peak selectivity). Macrocycles of "flexible" type (e.g., larger polyether crowns and cryptands) discriminate principally among smaller cations (plateau selectivity).²²

Incorporating benzene, cyclohexane, pyridine rings, and other constituents into macrocyclic flexible skeletons lead to their stiffening and may alter both ligand binding strength and selectivity. An example is that of a 20-membered crown ether with an incorporated 1,8-naphthyridine ring (K₂Naphthyr20C7-1) which shows excellent selectivity for Ba²⁺ (log *K* = 7.16) over Ca²⁺ (log *K* = 4.91) in CDCl₃.⁴²⁹ Chiral groups incorporated into the correct location of a macrocyclic framework may allow separation of optically active enantiomeric cations.^{2,22,677,1015,1032} Selectivities may be modified also by variation of side arms. 1,10-Diaza-18-crown-6 (A₂18C6-17) containing two carboxylate groups as side arms shows unique selectivity toward lanthanide cations as a group.⁷⁰⁴ 18-Crown-6 derivatives with amino groups in side arms are effective in K⁺ transport through a CH₂Cl₂ membrane and are highly selective in transport experiments for K⁺ over Na⁺.⁸⁰⁰

The number, kind, and arrangement of donor atoms also play important roles in macrocycle selectivities. Oxygen-donor atoms in classical crown ethers have the largest affinities for alkali, alkaline-earth, and lanthanide cations; nitrogen-donor atoms favor transition-metal cations; sulfur-donor atoms interact preferentially with Ag⁺, Pb²⁺, and Hg²⁺.²² For example, the extremely large stability differential among macrocycles (e.g., up to 10¹⁰ for Cu²⁺) may be achieved solely

through variation of number, kind, and location of donor atoms within the specific ligand frame employed.⁴⁸⁴

A special arrangement of two binding sites and the cavity observed in basket-shaped macrocycles make them almost ideal hosts for diammonium salts.^{939,940} The macrotricyclic (1,2-B)₂[2.2/2.2]-1 (Chart LXXIV) containing two 1,10-diaza-18-crown-6 subunits also binds selectively diammonium guests and recognizes the length of the chains connecting the two NH₃⁺ groups of the guests.⁷⁰¹ The ditopic macrocycle [1.1.C₆.C₆](A₃18C6-1) binds aminocarboxylates with preference over simple ammonium salts.⁹³⁵

Recently, Lindoy and co-workers have conducted a series of investigations on cation discrimination by structural dislocation.^{259,481,484,488,516} Structural dislocation is associated with a sudden change in the *K* value for cation-macrocycle interaction for a particular metal ion with a series of closely related macrocyclic ligands.^{259,486} In one example, the interaction of 17-, 18-, and 19-membered macrocycles (B₂A₃17C5-1, B₂A₃17C5-2, B₂A₃17C5-4, B₂A₃18C6-1, B₂A₃19C5-1, B₂A₃19C5-2, B₂A₃19C5-3) with Cd²⁺ and Zn²⁺ in 95% MeOH was examined. The log *K* values of Cd²⁺ with the 19-membered macrocycles were considerably lower than expected from the log *K* values for the 17- and 18-membered macrocycles. The observed dislocation along the Cd²⁺ series appears to be a crossover from coordination of the ether groups in the 17- and 18-membered macrocycles to their lack of coordination in the 19-membered macrocycle.⁴⁸⁶ The influence of solvent^{207,213,293,298,318,355,694,878} and counteranion^{110,262,487,523,558,732,821,923} on macrocycle selectivities are also well known and have been studied thoroughly.

D. Heat Capacities, ΔC_p

The thermodynamics of cation-macrocycle interactions has been studied extensively but has been limited almost entirely to log *K*, ΔG , ΔH , and ΔS investigations. Izatt and co-workers measured, along with other thermodynamic quantities, heat capacity changes for the interaction of two isomeric dicyclohexano-18-crown-6 ethers with several uni- and bivalent metal cations.⁶²⁴ They concluded that significant differences exist in the solvation or solvent structuring properties of the two isomers. However, the data set studied was too small to allow definitive conclusions to be reached. Morel and Morel-Desrosiers measured excess volumes and heat capacities of cryptand [2.2.2]-1 complexes with protons,⁸⁸² and with alkali and alkaline-earth cations.^{1033,1034} Heat capacities of specific species are particularly sensitive to structural changes of these species in solution. The determination of heat capacities helps in better understanding the nature of the interactions between the solvent and the cryptand-cation complexes and the nature of the balance between the external effects and the internal modifications of the cryptand upon complexation.⁸⁸² Morel and Morel-Desrosiers found that in H₂O the first protonation of the cryptand [2.2.2]-1 is mainly enthalpy controlled and the entropy of this reaction is much less positive than that of the second protonation whereas the heat capacity changes are much less negative than for the first protonation. This fact indicates a much weaker hydration of the second protonated site in comparison with the first one. From the results of their thermodynamic investigation and

related excess volume studies, the authors concluded that the proton of the monoprotonated cryptand is located outside and the second proton of the diprotonated cryptand is located inside the intramolecular cavity of the cryptand.⁸⁸² Heat capacity changes for alkali and alkaline-earth cation interactions with [2.2.2]-1 cryptand have been measured in H₂O and MeOH.^{1033,1034} Analysis of the experimental data shows that ΔC_p decreases in either MeOH or H₂O when going from Na⁺ to Rb⁺ which is ascribed not to the desolvation of the cation but to the loss of internal rotational freedom by the cryptand after complexation. The same behavior is observed when going from Sr²⁺ to Ba²⁺ which agrees with the observation, that in these cases, cryptand-metal ion complexation is independent of the nature of the solvent. However, complexation of [2.2.2]-1 by Cs⁺ in H₂O and by Ca²⁺ in H₂O and MeOH appears to have a different basis. In the case of Cs⁺, the heat capacity of complexation is larger than expected because this large cation is only partially enclosed in the ligand cavity giving the ligand larger rotational freedom and the Cs⁺ is less desolvated than a cation which is totally enclosed. In the case of Ca²⁺, the heat capacity of complexation is much smaller than expected on the basis of the above considerations. The ΔS value for Ca²⁺-[2.2.2]-1 interaction in H₂O is positive whereas $\Delta H \approx 0$ which suggests that Ca²⁺ is much more strongly desolvated than the other alkaline-earth cations after complexation with the cryptand.¹⁰³³ Table II contains ΔC_p values for cation-macrocycle interactions.

III. Thermodynamics of Anion-Macrocycle Interaction

Studies on anion-macrocycle interactions have been many fewer in number than those on cation-macrocycle interactions. Nevertheless, significant progress has been made in recent years. The motivation for anion studies is understandable because anion functions have the same importance as those of cations in chemistry and many biological processes. For example, at least two-thirds of enzyme substrates are anions;¹⁰³⁵ anions accompany cations in membrane transfer; and anions serve as nucleophiles, as bases, as redox agents, and in phase-transfer catalysis, etc.¹⁰

A. Design of Compounds

The goal of the synthetic design effort is to achieve effective and selective compounds which bind inorganic anions and negatively charged functional groups (carboxylate, phosphate, etc.) on organic and biological substrates.¹⁰³⁶ Design criteria for ligands capable of anion binding must recognize that anion molecules are large, that they have various stoichiometries, and that they have pH chemistry. Common inorganic anions are spherical (F⁻, Cl⁻, Br⁻, I⁻), linear (N₃⁻, CN⁻, SCN⁻), trigonal planar (NO₃⁻, CO₃²⁻, RCO₂⁻), tetrahedral (PO₄²⁻, SO₄²⁻, ClO₄⁻, MnO₄⁻), and octahedral (Fe(CN)₆⁴⁻, Co(CN)₆³⁻).¹⁰ Most anions exist only in a limited pH range, i.e., above pH 5-6 for the carboxylates, above 7 for HCO₃⁻.¹⁰

In Table III, the radii of some inorganic anions are given. It is apparent that anions are much larger than common cations. Agreement among literature radii values is not as good as that found for inorganic cations.

Radii of the individual halide ions as determined by different investigators are generally in good agreement. However, radii for oxyanions are generally not in good agreement. The values in Table III reflect these facts. Possible reasons for the lack of agreement among oxyanion radii include (1) the use of different bases for their calculation and (2) the lack of a common shape for them. The sets of radii from which the examples in Table III are taken are based on thermochemical¹⁰³⁷ and equivalent volume¹⁰³⁹ calculations. Few reported anion radii are based on X-ray crystallographic data. Care must be exercised in using reported anion radii either in interpreting data or in designing systems for study.

In Table IV, thermodynamic data are presented for the interaction of inorganic and organic anions with protonated macrocyclic ligands. The majority of the ligands have ammonium binding sites, several have guanidinium binding sites,¹⁰³⁶ and one has sulfonium (S⁺) binding sites.¹⁰⁶¹ $\log K$ values for complexes of calixarenes with anionic fluorescent dyes are also included.^{774,1046} The studies indicate that in aqueous solutions the hydrophobic forces influence calixarene-anion complex formation in general, but calixarene selectivities are governed by the electrostatic interactions.⁷⁷⁴ $\log K$ values have been reported for interaction of an optically active azacyclophane-type macrocycle with the (*R*) and (*S*) forms of a chiral enantiomeric anion.¹⁰⁶²

The first report of the complexes of anions with synthetic macrocycles was made by Park and Simmons in 1968.¹⁰³⁸ They found that biprotonated macrobicyclic diamines ([C₇.C₇.C₇]-1 to [C₁₀.C₁₀.C₁₀]-1 in Chart LXXIV) exhibited ion pairing which involved encapsulation of halide ions in the macrocycle cavity in aqueous media. They named this phenomenon "halide catapinosis". They also noticed that the size of the cavity played an important role in determining selectivity among the halide ions, Cl⁻, Br⁻, and I⁻. Later, complexes of small anions with α - and β -cyclodextrins were reported.¹⁰⁹¹

Lehn and co-workers,¹⁰⁸⁰ knowing that cryptands form stable and selective complexes with spherical cations, studied complexation of halide anions with two spheroidal macrotricycles, [3.3.1.1]-1 and [3.3.1.C₅]-1 (Chart LXXV), in which four protonated tertiary nitrogen atoms served as binding sites, and with their macrobicyclic analogue (A₂[3.3.1]). They found that the tetraprotonated macrotricycles encapsulated spherical halide anions in the same way as the nonprotonated macrotricycles had encapsulated spherical cations. In acidic aqueous media, remarkably stable complexes were formed by the tetraprotonated macrotricycles with Cl⁻. These hosts show very high Cl⁻ over Br⁻ selectivity (>1000). Both binding strength and selectivity of the macrotricycles were much higher than those of their macrobicyclic analogue which is due to a topological macrotricyclic cryptate effect. In each of these macrotricycle-anion complexes, the anion is held inside the rigid and closed molecular cavity of the tetraprotonated macrocycle by a tetrahedral array of ⁺N-H...X⁻ hydrogen bonds.¹⁰⁸⁰ This has been confirmed by X-ray crystallographic studies.¹⁰⁹²

In 1977, Schmidtchen synthesized macrotricycles in which not tertiary but quaternary ammonium salts served as binding sites (Chart LXXV) and examined the complexation of these macrotricycles with halide ions.¹⁰³⁵ Compared with Lehn's macrotricyclic complexes described in the previous paragraph, the $\log K$ values for the interaction of these macrocycles with Cl⁻ ion were much lower, and Br⁻ and I⁻ were better complexed than Cl⁻. The suggested explanation for this behavior is that quaternary ammonium ions do not have ionic hydrogen bonds as tertiary ammonium ions do, that conformation changes in these more flexible macrotricycles lower the electrostatic attraction, and that Br⁻ and I⁻ better match the larger cavities of these ligands.¹⁰ Complexation of these macrotricyclic quaternary ammonium salts with other inorganic anions as well as phenolate, carboxylate, and nucleotide anions has also been studied.^{1084,1085} It was confirmed that macrotricyclic quaternary ammonium salts discriminate between anions on a size basis and that the stabilities of the complexes depend on electrostatic and hydrophobic interactions, solvation, and conformational changes of macrocycles. Connecting two of these macrocycles by a *p*-xylene linkage produced a novel ditopic anion receptor which appeared to be more selective than the monotopic one by a factor of 3.¹⁰⁸⁶

In 1977, Lehn and co-workers designed and synthesized the cryptand (A₆[3.3.3]-1) for the recognition of linear triatomic species XYZ¹⁰²² and studied its anion complexing properties.⁹²² This cryptand forms a remarkably stable 1:1 complex with linear N₃⁻ in H₂O and shows selectivity for N₃⁻ over anions with different shapes. ¹³C NMR experiments show that N₃⁻ fits tightly into the ellipsoidal cavity of the hexaprotonated cryptand and is bound by two pyramidal arrays of three ⁺N-H...N⁻ hydrogen bonds which hold terminal nitrogen sites.⁹²² A perfect trigonal arrangement of three lobes of cryptand centered on the N,N' axis in the complex was confirmed by X-ray crystallography.⁹²⁶ The selectivity sequence of the cryptand toward anions is ClO₄⁻, Cl⁻, I⁻ < CH₃CO₂⁻, Br⁻ < HCO₂⁻ < NO₃⁻, NO₂⁻ << N₃⁻.⁹²² Nucleotide ions are not bound to this cryptand as strongly as it was expected which may be ascribed to the fact that these large substrates are only partially included into the cryptand cavity.⁹²⁶ Complexation of the cryptand with other linear anions like the hydrogen dihalide anions HX₂⁻ has been investigated also.^{917,924}

Macrocyclic polyamines which can be highly or fully protonated in the neutral pH range appear to be the best ligands for the biologically important carboxylate and adenosine phosphate anions because the formation of these anions occurs in these pH regions. Lehn and Dietrich and co-workers have synthesized macrocyclic polyamines based on propylene units (A₆24C6-1 and A₈32C8-1)⁷⁸¹ and macrocycles with mixed nitrogen-oxygen donor atoms connected by ethylene units (A₆27C9-1⁷⁸¹ and A₆24C8-1).^{1049,1050} These macrocycles are similar to those found in natural systems. Both types of protonated macrocycles were found to form stable and selective complexes with both inorganic (i.e., SO₄²⁻, Co(CN)₆³⁻, and Fe(CN)₆⁴⁻) and organic (i.e. carboxylate and nucleotide) polyanions in aqueous solution in the neutral pH range. Since selectivity in these systems depends on electrostatic and geometrical ef-

fects, modification of macrocyclic cavity shape and size should allow one to control the selectivity sequence.⁷⁸¹ Recently, the interactions of A₆24C6-1 and A₈32C8-1 in their less than fully protonated forms with carboxylate and nucleotide anions have been investigated.^{916,1049}

Macrocyclic penta- and hexaamines (A₅15C5-1 and A₆18C6-1) based on ethylene units are selective in their triprotonated forms at neutral pH for polycarboxylate anions which occur in the catabolic tricarboxylic acid cycle in which the two carboxylate groups are near each other, and are ineffective toward other carboxylate and monocarboxylate anions.¹⁰⁴¹ These macrocyclic polyamines also form stable 1:1 complexes at neutral pH with phosphate anions such as inorganic phosphate, AMP, ADP, ATP, etc.⁴⁷² and with physiologically essential CO₃²⁻.¹⁰⁴⁰ Bis(macrocyclic polyamine) ligands synthesized recently by Kimura and co-workers (Chart LXVI) show enhanced polyanion binding due to probable formation of sandwich-type complexes.⁴⁷³ Gelb and co-workers studied the interactions of tetraprotonated macrocyclic hexaamines with inorganic anions (tri- and tetraprotonated forms in the case of SO₄²⁻) and found that the process of desolvating macrocycle and anion solvation spheres is a driving force in complexation.^{720,721,1043}

Large polyazacycloalkanes, which have been discussed in section II, produce highly charged protonated species in the neutral pH range. Complexation of such large polyazacycloalkanes as A₉27C9-1, A₁₀30C10-1, and A₁₁33C11-1 with large polyanions, Fe(CN)₆⁴⁻ and Co(CN)₆³⁻, have been examined.^{1045,1052} It was found that these macrocycles do not show selectivity toward the anions studied. This result is consistent with strong interactions, mainly Coulombic in nature, between the anion and the protonated ligand. The more protonated the ligand, the more stable is the complex. An X-ray crystallographic study of the octaprotonated A₁₀30C10-1-Co(CN)₆³⁻ complex shows that the anion lies outside of the ligand cavity.¹⁰⁵²

Ditopic macrocyclic polyamines containing two triamine units, A₆24C6-1, A₆32C6-1, A₈32C6-2, and A₆38C6-1, were designed as receptors for dianions.^{782,828} All of the polyamines studied form stable and highly selective complexes with organic dicarboxylate anions, ⁻O₂C-(CH₂)_{*m*}-CO₂⁻. These macrocycles display linear molecular recognition based on ditopic binding between two triammonium units of the macrocycle and the two terminal CO₂⁻ groups of the carboxylate anion. The most stable complex is formed when the macrocycle is fully protonated and the length of the dicarboxylate anion complements the site separation of the macrocycle.

Azacyclophane-type macrocycles possess large cavities of different sizes which have pronounced hydrophobic character and form host-guest inclusion complexes with charged or uncharged organic compounds in aqueous solution by hydrophobic and/or electrostatic interactions. Table IV contains log *K* values for the formation of complexes of various azacyclophane-type macrocycles mostly with anionic fluorescent dyes such as 1-anilino-8-naphthalenesulfonate or 6-*p*-toluidino-naphthalene-2-sulfonate,^{1053,1055,1069} but also with other aromatic guests bearing sulfonate^{1063,1070} or carboxylate^{990,1056,1074} residues. Data are also included for mo-

nocyclic and bicyclic azacyclophane-type ligands synthesized by Lehn and co-workers which in their protonated forms complex dicarboxylate anions.^{1065,1079} In these complexes, the matching of the shape and size of the macrocycle hydrophobic cavity to the shape of the hydrophobic anion is important for optimum complex stability. In addition, increasing the hydrophobic area of the cavity improves complex formation.^{1068,1070} Azacyclophane-type macrocycles are able to select guests by recognition of the steric structure and charge of the guests. Their complexes with dianions are stronger than those with corresponding monoanions. They form strong complexes with anions having naphthalene rings, weaker but relatively strong complexes with anions having benzene rings, and only weak complexes with anions having different structures from the aromatic ones.¹⁰⁶⁶ Macrocycles bearing quaternary ⁺N charges in the cavity bind aromatic guests, including anions, 60 times stronger than aliphatic guests of similar shape. The differences in log *K* values are much smaller with the same macrocycles bearing no charges.¹⁰⁷³ Murakami and co-workers prepared a cubic macrocyclic azacyclophane (azacyclophane-5, Chart LXXIX) which exhibits size-sensitive and regioselective molecular recognition due to a relatively rigid and hydrophobic three-dimensional cavity.^{989,1089}

Macrocycles containing guanidinium moieties as binding sites were synthesized by Lehn and co-workers.¹⁰³⁸ These macrocycles were expected to be effective and selective ligands for phosphate, di- and triphosphate, AMP, ADP, and ATP anions. However, the PO₄³⁻ complex was found to have low stability and there was almost no macrocyclic effect.^{10,1036}

New classes of mono-,¹⁰⁴² bi-,¹⁰⁸¹⁻¹⁰⁸³ and ditopic tricyclic¹⁰⁸⁷ hosts containing Lewis acid tin atoms as the binding sites were reported. Except for the macromonocycles in MeCN, ¹¹⁹Sn NMR experiments showed these macrocycles to be efficient and highly selective complexing agents for halide ions in CDCl₃. Both ¹¹⁹Sn NMR and X-ray crystallographic results demonstrate that anions are enclosed in the cavity.¹⁰⁸⁷ The selectivity apparently originates from the match between anion and macrocycle cavity diameters. For example, the small Sn₂[C₆.C₆.C₆]-1 macrobicycle binds strongly and exclusively the small F⁻ ion as expected from the match of the host and guest diameters.¹⁰⁸² This phenomenon resembles the small preorganized Li⁺ and Na⁺-specific spherands presented by Cram.⁴⁹⁵ Macrotricycles have relatively rigid structures with four incorporated tin atoms and show enhancement in anion binding strength as expected.¹⁰⁸⁷

B. Selectivities

Achieving selective complexation between receptors and substrates of biochemical interest has been a driving force in the design of macrocycles suitable for selective binding of anions. As in the case of cations, selectivities of macrocycles toward anions are governed by many parameters. An important parameter involving spherical anions is the match between anion and macrocycle cavity diameters. The selectivity of one of the first ever macrotricycles for halide ions was size based.¹⁰³⁸ Additional examples are found of this kind of size-based selectivity which plays a major role when macrocycles have limited conformational possibilities

upon complexation.^{1081,1087} The $\text{Sn}_2[\text{C}_6\text{C}_6\text{C}_6]-1$ macrocycle binds exclusively F^- .¹⁰⁸² X-ray crystallographic studies showed that this macrocycle is a crude sphere with Sn-Sn distance of 5.25 Å. Assuming a Sn atom radius of 1.4 Å, only F^- with a radius of 2.6 Å fits between the tin atoms.¹⁰⁸² The geometry and topology of macrocyclic cavities is another parameter which influences selectivities. The spherical tetraprotonated macrotricyclic, [3.3.1.1]-1, was found to be selective for Cl^- over other halide ions.¹⁰⁸⁰ An ellipsoidal cavity of the hexaprotonated $\text{A}_6[3.3.3]-1$ cryptand with suitable arrangement of binding sites displays molecular recognition of linear triatomic anions with compatible dimensions.^{917,922,926} Arrangement of and distance between binding sites in ditopic polyammonium macrocycles (e.g., $\text{A}_638\text{C}6-1$, $\text{A}_624\text{C}6-1$) result in a selectivity pattern toward dicarboxylate anions corresponding to a process of linear molecular recognition.^{782,828} Usually, macrocycle selectivities for anions are governed by several factors simultaneously. Macrocyclic penta- and hexaamines are found to recognize only the dicarboxylates having suitable geometry and electronic arrangement.¹⁰⁴¹ Selectivities of the polyammonium macrocycles $\text{A}_624\text{C}6-1$, $\text{A}_632\text{C}8-1$, $\text{A}_627\text{C}9-1$, and $\text{A}_624\text{C}8-1$ toward inorganic and organic (carboxylate and nucleotide phosphate) polyanions in H_2O are also based on electrostatic and structural effects.^{783,1049,1050} In calixarenes, selectivities are controlled crucially by the electrostatic forces and influence of hydrophobic forces is negligible.⁷⁷⁴ Azacyclophane-type macrocycles show remarkable selectivities toward organic anions. These selectivities are based on the host-guest recognition of steric structure and charge.^{1066,1070}

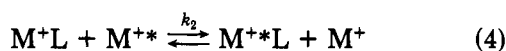
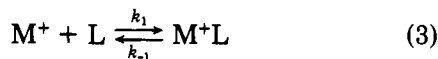
IV. Kinetics of Macrocyclic Interaction with Cations and Anions

Since the discovery of the unique features of crown ether complexing abilities toward metal cations, numerous thermodynamic studies have been performed on these systems. The mechanisms of the reactions, however, have not attracted as much attention and the kinetics of macrocycle-ion complexation reactions have been studied much less thoroughly. Kinetic and activation parameters for cation- and anion-macrocycle interactions are given in Table V, together with the method, temperature, and solvent used in their determination. When necessary, relevant equations are also given under the condition heading.

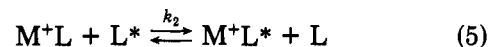
A. Crown Ethers

1. Decomplexation Processes

In the cases of crown ethers and cryptands in nonaqueous solutions, the rates of formation (k_f) for their interaction with alkali-metal cations are generally diffusion controlled and, consequently, the complexation selectivities are governed by the decomplexation rates (k_d).¹¹⁶² It is obvious that understanding of decom-



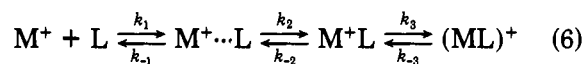
plexation mechanisms and kinetics is essential. Two mechanisms should be considered in the decomplexation process of crown ether (L or L*)-alkali metal cation (M^+ or M^{*+}) complexes: unimolecular dissociative (eq 3) and bimolecular cation exchange (associative)^{1163,1164} (eq 4). Lockhart considers an additional mechanism^{1124,1125} (eq 5):



The solvent plays a major role in the unimolecular mechanism.^{541,1129} This mechanism is favored in high-dielectric solvents despite a higher activation enthalpy, which is compensated by higher activation entropy.⁶⁵⁴ The bimolecular mechanism is mainly controlled by conformational rearrangements of the ligand and, in this case, the free energy for the decomplexation process is solvent independent.^{1115,1141,1144} The kinetics of dissociation of ($18\text{C}6-1 + \text{Na}^+$, BPh_4^-) in PC, MeCN, Py, and Me_2CO have been determined by ^{23}Na NMR.¹¹²⁷ In the first three solvents, two mechanisms of exchange, unimolecular and bimolecular, compete with each other. In Me_2CO , the unimolecular mechanism has been observed almost exclusively. Activation parameters have been measured in all four solvents. ΔH^\ddagger (unimolecular) follows the trend $\text{MeCN} < \text{Me}_2\text{CO} < \text{Py} \approx \text{PC}$.¹¹²⁷ The same NMR techniques were used to study exchange kinetics for ($\text{B}15\text{C}5-1 + \text{Na}^+$, Ph_4B^-) in NMe. The bimolecular mechanism was predominant in this case with the following activation parameters: $\Delta H^\ddagger = 28$ kJ/mol, $\Delta S^\ddagger = -57$ J/K·mol and $\Delta G^\ddagger = 45$ kJ/mol.¹¹¹⁶ Popov studied the influence of anions on the kinetics of decomplexation of ($18\text{C}6-1 + \text{Na}^+$) in THF and found that with BPh_4^- as the counteranion, the unimolecular mechanism was predominant, but with SCN^- the predominant mechanism was a bimolecular one.¹¹²⁹

2. Complexation Processes

In decomplexation kinetics studies, alkali-metal NMR techniques have proved to be useful.⁶⁵⁴ Among the methods used to study complexation processes, ultrasonic relaxation techniques have been particularly effective in obtaining information on rate-determining steps of very fast complexation reactions.⁵²⁹ In most cases, metal cation-crown ether complexation processes can be explained by the multistep Eigen-Winkler mechanism (eq 6):¹¹⁶⁵



where M^+ = solvated metal ion, L = free macrocyclic ligand, $\text{M}^+\cdots\text{L}$ solvent-separated metal-macroscopic ligand pair, M^+L = contact pair, $(\text{ML})^+$ = final complex with the metal cation embedded in the macrocyclic cavity. The Eigen-Winkler mechanism consists of a series of steps, where, for the same metal cation, both solvent and crown ethers may influence the activation energy profile of the process. The first step, after the outer-sphere complex is formed, involves partial rearrangement of the macrocyclic ligand and partial cation desolvation. The second step leads to the encirclement or encapsulation of the metal ion and more complete desolvation. The rate-determining step for the last process may be desolvation (in H_2O) or ligand rearrangement (e.g., in DMF or MeOH) depending on the

relative energy of desolvation vs that for ligand rearrangement.⁵²⁹ In solvents of low permittivity ion pairs are the substrate attacked by the crown ethers. Competing dimerization of the ion pairs further complicates the reaction mechanism.¹¹⁶⁶ It has been suggested¹¹⁶⁷ that in solvents of intermediate permittivity and low donor number with an excess of electrolyte present, the anion in excess rather than the cation may be the source of the observed bimolecular mechanism. This surmise is consistent with an earlier observation¹¹²⁹ noted above that the anion SCN^- gives rise to a bimolecular mechanism of $\text{NaI}8\text{C}6^+$ in the solvent THF. More information on complexation mechanisms can be found in refs 896, 1168–1170.

Rebek and co-workers found that complexation rates for the interaction of crown ethers with certain organomercurials are slow on the *human time scale*.¹¹³⁰ Using ^{19}F NMR techniques in CDCl_3 , they have determined the k_f values for the interaction of $\text{B}_220\text{C}6-1$ and $\text{Py}_220\text{C}6-1$ with $\text{Hg}(\text{CF}_3)_2$. Half-lives for these reactions ranged from hours to months. Studies^{736,1130} showed that solvation forces between $\text{Hg}(\text{CF}_3)_2$ and solvent are weak but the rearrangement of its complex with $\text{B}_220\text{C}6-1$ to the rotaxane-type structure is highly-energy dependent and time consuming which is consistent with the observed large negative activation entropy ($\Delta S^\ddagger = -104.6 \text{ J/K}\cdot\text{mol}$).¹¹³⁰

Kinetics and mechanisms for the interaction of $18\text{C}6-1$ and $\text{A}_218\text{C}6-1$ with UO_2^{2+} in PC have been evaluated by stopped-flow spectrophotometry.¹¹³⁴ The suggested mechanisms feature the prominent role in the kinetic processes of the first and second solvation shells of the UO_2^{2+} ion. Steps of the proposed mechanism involve the very fast formation of outer-sphere complexes with one or two ligands entering the second solvation shell of UO_2^{2+} ion followed by one to four interchange steps with the loss of solvent in the inner solvation shell of UO_2^{2+} ion and with the formation of a metal–ligand bond.

B. Cryptands

Cryptands form exceptionally stable complexes with cations. Since the 1985 review² the kinetics of alkali-metal and alkaline-earth-metal cation interaction with cryptands have been studied extensively.^{407,862,907,1146,1151} These studies confirmed that the thermodynamic stabilities of these complexes strongly depend on the match of the cation and cryptand cavity diameters. There is a strong correlation between dissociation rate constants and thermodynamic stability constants.⁸⁷⁰ The kinetics of the complexation process are also sensitive to solvent variation.^{867,1152} This sensitivity is a function of the solvation of the ligand binding sites and of the complexed cation with the rates of dissociation increasing with increasing solvent donicity. Rate measurements involving cryptate complexes show that among nonaqueous solvents the solvation variation influences dissociation rate constants more than formation rate constants.^{874,1147} The dissociation reactions of metal cryptates may be catalyzed by some anions.¹¹⁶¹ Under suitable steric conditions, the anion interacts directly with the complexed metal cation and an ion pair is formed.

Kinetic studies of cryptate complexes of transition-metal and heavy-metal cations are fewer in number

than those involving complexes of alkali-metal and alkaline-earth-metal cations. These studies are limited to cryptand complexes with $\text{Ag}(\text{I})$ in $\text{MeCN}-\text{H}_2\text{O}$ mixtures,^{417,869,1157} $\text{Ag}(\text{I})$ in H_2O ,¹¹⁷¹ $\text{Cu}(\text{II})$ in Me_2SO ,¹¹⁷² $\text{Pb}(\text{II})$ in MeOH ,⁸⁷⁵ and $\text{Pb}(\text{II})$ in MeCN .¹¹⁵⁹ Recently, Cox and co-workers examined Ag^+ and Pb^{2+} complexation with cryptands [2.1.1]-1, [2.2.1]-1, and [2.2.2]-1.⁸⁷⁰ Matching of metal cation and macrocycle cavity diameters is an important factor in the formation of these complexes. However, both Ag^+ and Pb^{2+} form significantly stronger complexes with cryptands than do alkali-metal and alkaline-earth-metal cations of similar ionic radii (compare Na^+/K^+ with Ag^+ , and Sr^{2+} with Pb^{2+}). For Ag^+ complexes, the higher stabilities are due to lower dissociation rate constants. For Pb^{2+} complexes, the higher stabilities result from higher formation rate constants whereas the dissociation rate constants are similar.⁸⁷⁰ Hydroxide-assisted dissociation of $\text{Pb}(\text{II})$ cryptates has been shown recently.¹¹⁵⁵

C. Preorganized Macrocycles

Table V contains formation and decomplexation rate constants for complexes of several preorganized macrocycles such as hemispherands,^{496,750} spherands,^{493,494} and bridged calixarenes⁷⁵⁷ with alkali-metal and $t\text{-C}_4\text{H}_9\text{NH}_3^+$ cations in CDCl_3 saturated with D_2O . The preorganization of macrocycle binding sites affects not only thermodynamic stability but kinetic stability of the complexes as well. The anisyl and cyclic urea units, which mainly provide the preorganized binding sites, shield the cavities of these macrocycles from solvent molecules. As a result, both the rates of formation and dissociation decrease in comparison with flexible crown ethers. The higher thermodynamic stabilities of the preorganized macrocycles result from the lower dissociation rates of their complexes.⁴⁹⁶ The enthalpic and entropic contributions to the free energies of activation for the dissociation of spherand complexes reinforce rather than cancel one another.⁴⁹³

Relatively new preorganized macrobicycles containing two bridgehead tin atoms appear to be highly size-selective toward halide anions.^{1081–1083} NMR experiments showed that for Cl^- complexation, the rates of formation of complexes at 20°C in CDCl_3 increased monotonically as a function of the length of the carbon chain connecting the tin atoms but the rates of dissociation did not. The trend in rates of formation resulted mainly from decreases in the activation energies as the chains become longer whereas entropic demands were relatively constant. The rate constants for dissociation are almost equally dependent on the activation energy and the entropic terms.¹⁰⁸¹ Kinetic data for anion–macrocycle interaction are displayed in Table VI.

D. Other

In Table V, kinetic data for one azacyclophane-type macrocycle, $(1,4\text{-B})_4\text{A}_428\text{C}4-2$, and two catenands, $\text{Cat}(\text{Phen}30\text{C}8)_2-1$ and $\text{Cat}(\text{Phen}30\text{C}8)_2-2$ are presented. Temperature-jump measurements showed that the formation and decomplexation rates of the complexes of $(1,4\text{-B})_4\text{A}_428\text{C}4-2$ with the two isomeric hydroxynaphthalenecarboxylate anions are fast enough to allow the host and guest to search for the most appropriate arrangement for slow subsequent hydrolysis of the

guest.¹⁰⁵⁶ Investigation of catenand complexes with H^+ and Cu^+ cations^{1019,1021} revealed that $Cat(Phen30C8)_2-2$ forms much more kinetically inert complexes than $Cat(Phen30C8)_2-1$ which is due to a special molecular topography of these ligands before and after complexation.

V. Suggestions for Future Work

The past two decades have seen an enormous expansion of research in all aspects of macrocyclic chemistry. The power of this field in exploring significant and interesting questions in chemistry has become evident. It is not possible in the short space available to suggest areas where future work would be profitable in all fields of macrocyclic chemistry. The suggestions presented will be limited to those aspects of the field where thermodynamics and kinetics could be valuable.

More complete characterization of macrocycle-guest interactions is needed. The number of new macrocycles continues to grow at a rapid rate. The number of new compounds listed in this review exceeds the number in the 1985 review by about 4-fold. This increase is similar to that reported in *Opportunities in Chemistry*¹¹⁷³ for organic compounds from 1962-1982 and reflects the interest in macrocycles of those trained in synthetic organic chemistry. Few of the new macrocycles have been well characterized with respect to either thermodynamic or kinetic data associated with their interactions with guests. More data valid in a variety of solvents are needed in order to understand the effect of solvent parameters on thermodynamic and kinetic values. Qualitative observations have been reported in several areas such as transport in membrane systems and solvent extraction. Determination of $\log K$ values for appropriate reactions could allow these observations to be quantitated, in some cases. In many cases, $\log K$ values are available only for alkali- and alkaline-earth-metal ions. One example is the use of switching mechanisms to control metal complexation. Extending these studies to other metal ions could be informative. It would be desirable to have several laboratories collaborate to provide standard chemical systems which are valid under a variety of solvent conditions. Availability of such standard chemical systems would be useful to all workers to insure accuracy of thermodynamic and kinetic data.

The number of studies of the interactions of anions with macrocycles has increased significantly during the past few years. It would be desirable to produce more $\log K$ and kinetic data for these interactions. Most data now available involve the interaction of halide ions and small organic anions with a limited number of macro-

cycles. There are excellent possibilities for the rational design of novel preorganized macrocycles capable of shape fitting with targeted anions. Anions of interest might include linear, bent, trigonal, planar, tetrahedral, and octahedral inorganic species as well as those of organic and biochemical interest.

A small number of thermodynamic studies have been reported on macrocycle-cation interaction as a function of temperature. The lack of such data is surprising since the resulting ΔC_p values can be valuable in understanding solvent-solute interactions. An example of the kind of information available from such studies is found in the work of Izatt⁶²⁴ and Morel,^{882,1033} referred to earlier. Accurate ΔC_p values require ΔH values determined calorimetrically as a function of temperature. One reason that more ΔC_p values are not available is that few laboratories are equipped to carry out the calorimetric studies.

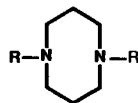
More scientists well trained in physical and analytical chemistry are needed in order to carry out meaningful thermodynamic and kinetic studies. This expertise becomes more important as researchers desire to characterize systems in nonaqueous solvents and as a greater variety of guests are used. It would be desirable to have more researchers trained to conduct reliable thermodynamic and kinetic studies in the future. Few laboratories are preparing such students at the present time.

Finally, there is increasing interest in the application of high speed computer techniques to evaluating the significance of selected parameters on macrocycle-guest interaction. This effort will be most successful if there are reliable thermodynamic and/or kinetic data to test the calculated values against. There is a need for coordinated studies in order to test computer-generated data against experimental values. Considering the enormous number of new macrocycles being synthesized, it would be desirable to be able to calculate properties with a high degree of reliability. This possibility appears to be remote, but its accomplishment is desirable.

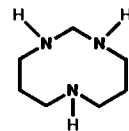
Acknowledgments. Appreciation is expressed to Mrs. Daria J. Zamecka-Krakiwicz for the preparation of the charts, and to Dr. Leonard F. Lindoy, Dr. Edward M. Eyring, Dr. Sergio Petrucci, Dr. Jan F. Biernat, Dr. Zenon Pawlak, and Dr. Krzysztof E. Krakiwicz for valuable comments. Partial financial support is acknowledged from the State of Utah Centers of Excellence Program, the Office of Naval Research, and the Department of Energy (Basic Energy Sciences, Grant No. DE-FGO2-86ER13463).

VI. Charts I-LXXXIII

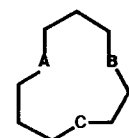
CHART I



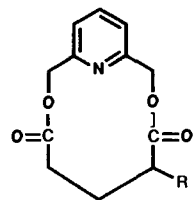
A₂8C2-1
R = CH₂CO₂H
A₂8C2-2
R = CH₂COCH₂CO₂H



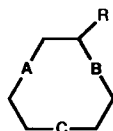
A₃10C3-2



A₃11C3-2
A, B, C = NH

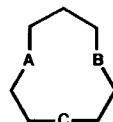


K₂Py12C3-1
R = H
K₂Py12C3-2
R = NHCO₂CH₂C₆H₅

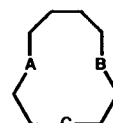


9C3-1
A, B, C = O; R = H
A₂9C3-1
A, B = NH;
C = O; R = H
A₂9C3-2
A, B = NCH₂CO₂H;
C = O; R = H
A₃9C3-1
A, B, C = NH;
R = H
A₃9C3-2
A, B, C = NH
R = CH₃
A₃9C3-3
A = NCH₂CO₂H;
B, C = NH; R = H
A₃9C3-4
A, B, C = NCH₂CO₂;
R = H
A₃9C3-5
A, B, C = NCH₂CO₂H;
R = H

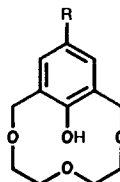
A₃9C3-6
A, B, C = NCH₂PO₃²⁻
R = H
A₃9C3-7
A, B, C = NCH₂PO₃H₂
R = H
A₃9C3-8
A, B, C = N(CH₂)₂PO₃H₂
R = H
A₃9C3-9
A, B, C = NCH₂P(O)(C₆H₅)₂;
R = H
A₃9C3-10
A, B, C = N(CH₂)₂OH;
R = H
A₃9C3-11
A, B, C = NCH₂CON(CH₃)₂
R = H
A₃9C3-12
A = N(CH₂)₂PO₃H₂;
B, C = N(CH₂)₂PO₃H; R = H
A₂9C3-1
A, B = NH; C = S; R = H



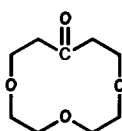
A₂10C3-1
A, B = NH; C = O
A₂10C3-2
A, B = NCH₂CO₂H;
C = O
A₃10C3-1
A, B, C = NH



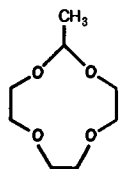
A₃11C3-1
A, B, C = NH



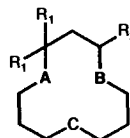
(1,3-B)12C3-1
R = N=N[2,4-(NO₂)₂C₆H₃]



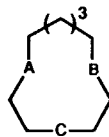
K12C3-1



11C4-1

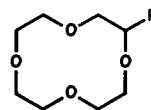


A₃12C3-2
A, B, C = NH; R₁, R₂ = H
A₃12C3-3
A, B, C = NH; R₁, R₂ = CH₃;
A₃12C3-4
A, B, C = NH; R₁ = H;
R₂ = 2-O⁻C₆H₄
A₃12C3-5
A, B, C = NCH₂CO₂H;
R₁, R₂ = H
A₃12C3-6
A, B, C = NCH₂PO₃²⁻;
R₁, R₂ = H
A₃12C3-7
A = NH;
B, C = NCH₂CON(CH₃)₂
R₁, R₂ = H
A₃12C3-8
A, B, C = NCH₂CON(CH₃)₂
R₁, R₂ = H



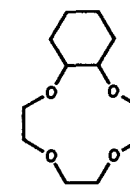
A₃12C3-1
A, B, C = NH

CHART II

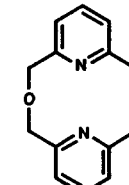


12C4-1
R = H
12C4-2
R = CH₂OH
12C4-3
R = C₁₂H₂₅
12C4-4
R = CH(OC₂H₅)₂ (d,l)
12C4-5
R = CH₂OCH₂CH(OH)-
CH₂ Morpholine
12C4-6
R = CH₂OCH₂CH(OH)-
CH₂ Adenosine
12C4-7
R = CH₂OC(O)C(CH₃)-
(C₁₂H₂₅)CO₂C₂H₅

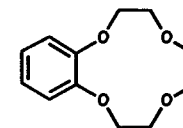
12C4-8
R = CH₂O-[2-(CH₂=CH-
CH₂O)C₆H₄]
12C4-9
R = CH₂O-[2-(CH₂=C-
(CH₃)CH₂O)C₆H₄]
12C4-10
R = CH₂OCH₂CH-CH₂
O
12C4-11
R = CH₂O-[2-(CH₂-CH-
O
CH₂O)C₆H₄]
12C4-12
R = CH₂O-[2-(CH₂-C(CH₃)-
O
CH₂O)C₆H₄]



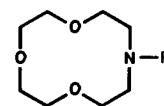
Cy12C4-1



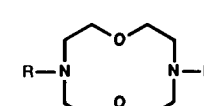
Py₂12C4-1



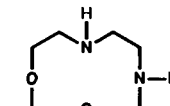
B12C4-1
R = H
B12C4-2
R = C(O)CH₃
B12C4-3
R = NHC(O)HC=CH₂



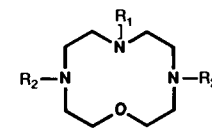
A12C4-1
R = H
A12C4-2
R = CH₃
A12C4-3
R = C₁₂H₂₅
A12C4-4
R = CH₂C₆H₅
A12C4-5
R = CH₂[2-CH₃O-
C₆H₄]
A12C4-6
R = CH₂[2-NO₂C₆H₄]
A12C4-7
R = CH₂[2-HO-5-NO₂-
C₆H₃]
A12C4-8
R = CH₂CH₂CH₂OH
A12C4-9
R = CH₂CH(OH)CH₃
A12C4-10
R = CH₂CH₂OCH₃
A12C4-11
R = (CH₂CH₂O)₂CH₃
A12C4-12
R = (CH₂CH₂O)₃CH₃
A12C4-13
R = (CH₂CH₂O)₄CH₃
A12C4-14
R = (CH₂CH₂O)_{allyl}
A12C4-15
R = (CH₂CH₂O)₅CH₃
A12C4-16
R = (CH₂CH₂O)₆CH₃
A12C4-17
R = 2-CH₃OC₆H₄
A12C4-18
R = 4-CH₃OC₆H₄
A12C4-19
R = CH₂CH(OH)-
CH₂Morpholine
A12C4-20
R = CH₂CH(OH)-
CH₂Adenosine
A12C4-21
R = (CH₂)₂CO₂CH₃



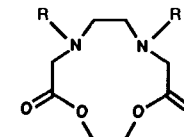
A₂12C4-1
R = H
A₂12C4-2
R = CH₂CH₂OH
A₂12C4-3
R = CH₂C(O)N(CH₃)₂
A₂12C4-4
R = CH₂CH₂C(O)N(CH₃)₂
A₂12C4-5
R = CH₂CO₂H



A₂12C4-6

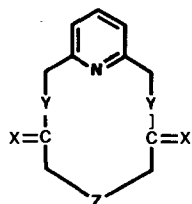


A₃12C4-1
R₁, R₂ = H
A₃12C4-2
R₁, R₂ = CH₃
A₃12C4-3
R₁, R₂ = CH₂CH(OH)CH₃
A₃12C4-4
R₁, R₂ = CH₂CO₂H
A₃12C4-5
R₁ = H; R₂ = CH₂CO₂H

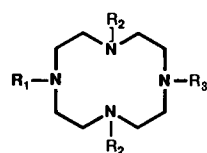


K₂A₂12C4-1
R = CH₂CO₂H

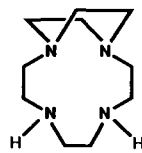
CHART III



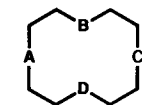
PyA₃12C4-1
X = H₂;
Y, Z = NCH₂CO₂H
K₂PyT12C4-1
X, Y = O; Z = S
K₂PyT12C4-2
X, Y = O; Z = SO



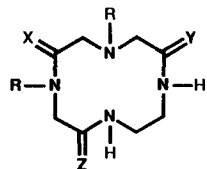
A₄12C4-1
R₁, R₂, R₃ = H
A₄12C4-2
R₁, R₃ = H; R₂ = CH₃
A₄12C4-3
R₁, R₂, R₃ = CH₃
A₄12C4-4
R₁, R₂, R₃ = CH₂CO₂H
A₄12C4-5
R₁, R₂, R₃ = CH₂CH(OH)CH₃
A₄12C4-6
R₁, R₂, R₃ = CH₂PO₃²⁻
A₄12C4-7
R₁, R₂, R₃ = CH₂PO₃H₂
A₄12C4-8
R₁, R₂, R₃ = (CH₂)₂PO₃H₂
A₄12C4-9
R₁, R₂, R₃ = CH₂CH₂P(O)(C₆H₅)₂
A₄12C4-10
R₁, R₂ = CH₂CO₂⁻;
R₃ = CH₂C(O)NHC₃H₇
A₄12C4-11
R₁, R₂, R₃ = CH₂CON(CH₃)₂



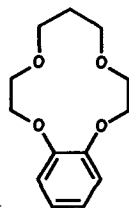
A₄12C4-12



T₂12C4-1
A, C = S; B, D = O
T₄12C4-1
A, B, C, D = S
AT₂12C4-1
A = O; B, D = S;
C = NCH₂C₆H₅
A₂T₂12C4-1
A, B = NH; C, D = S
A₂T₂12C4-2
A, C = NH; B, D = S
A₂T₂12C4-3
A, C = NCH₃; B, D = S
A₃T12C4-1
A, B, C = NH; D = S

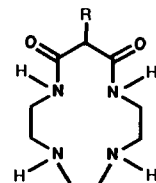


K₂A₄12C4-1
R = H; X, Y = O;
Z = H₂
K₂A₄12C4-2
R = CH₂CO₂H
X = H₂; Y, Z = O

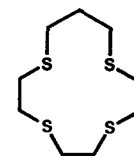


B13C4-1

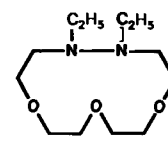
CHART IV



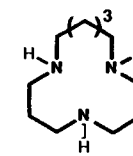
K₂A₄13C4-1
R = H
K₂A₄13C4-2
R = CH₂CH₂C₆H₅
K₂A₄13C4-3
R = CH₂CH₂[2-C₅H₄N]
K₂A₄13C4-4
R = CH₂CH₂[2-C₅H₄N-O]



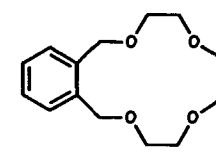
T₄13C4-1



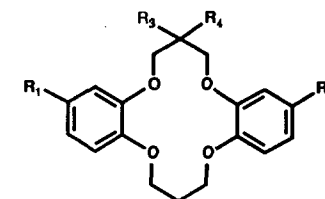
A₂13C5-1



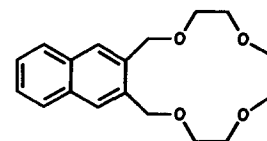
A₃14C3-1



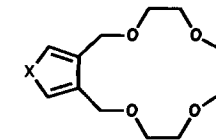
B14C4-1



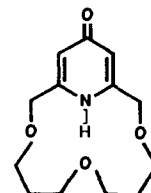
B₂14C4-1
R₁, R₂, R₃, R₄ = H
B₂14C4-2
R₁, R₂, R₄ = H;
R₃ = OCH₂CO₂H
B₂14C4-3
R₁, R₃, R₄ = H;
R₂ = CH₃
B₂14C4-4
R₁, R₃, R₄ = H;
R₂ = t-C₄H₉
B₂14C4-5
R₃, R₄ = H;
R₁, R₂ = t-C₄H₉
B₂14C4-6
R₁, R₂ = H; R₃ = C₁₀H₂₁
R₄ = OCH₂CO₂H



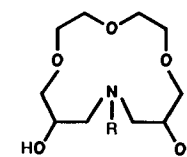
(2,3-Nap)14C4-1



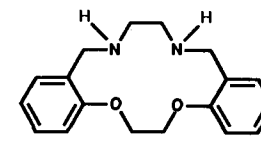
Fur14C4-1
X = O
Thio14C4-1
X = S



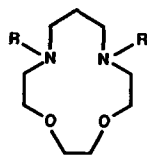
Pyridono14C4-1



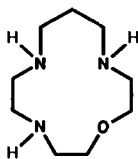
A14C4-1
R = (CH₂CH₂O)₂C₄H₉



B₂A₂14C4-1

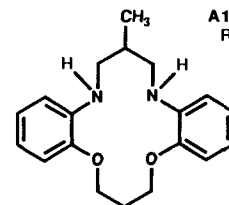


A₂13C4-1
R = H
A₂13C4-2
R = CH₂CO₂H

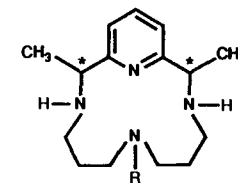


A₃13C4-1

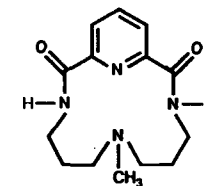
A₄13C4-1
R₁, R₂, R₃, R₄, R₅ = H
A₄13C4-2
R₁, R₂, R₃ = H; R₄, R₅ = CH₃
A₄13C4-3
R₁, R₂, R₄, R₅ = H;
R₃ = CH₃
A₄13C4-4
R₁, R₄, R₅ = H; R₂, R₃ = CH₃
A₄13C4-5
R₂, R₃ = H;
R₁, R₄, R₅ = CH₃
A₄13C4-6
R₁ = CH₂CO₂H;
R₂, R₃, R₄, R₅ = H
A₄13C4-7
R₁ = CH₂CO₂H;
R₂, R₃, R₄ = H; R₅ = CH₃
A₄13C4-8
R₁ = CH₂CO₂H
R₂, R₃ = H; R₄, R₅ = CH₃;
A₄13C4-9
R₁ = CH₂CO₂H
R₂, R₃, R₄ = H; R₅ = C₂H₅;
A₄13C4-10
R₁, R₃, R₄, R₅ = H
R₂ = 2-HOC₆H₅
A₄13C4-11
R₁ = CH₂PO₃H;
R₂, R₃, R₄, R₅ = H



B₂A₂14C4-2

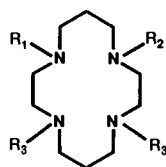


PyA₃14C4-1
R = H (meso)
PyA₃14C4-2
R = H (mixture of isomers)
PyA₃14C4-3
R = CH₃ (mixture of isomers)

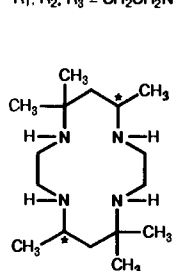


K₂PyA₃14C4-1

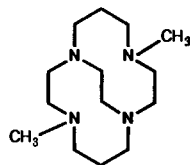
CHART V



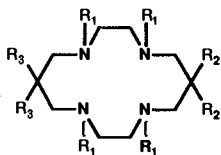
- A₄14C4-1**
R₁, R₂, R₃ = H
- A₄14C4-2**
R₁ = CH₃; R₂, R₃ = H
- A₄14C4-3**
R₁, R₂ = CH₃; R₃ = H
- A₄14C4-4**
R₁, R₂, R₃ = CH₃
- A₄14C4-5**
R₂, R₃ = CH₃;
R₁ = CH₂CH₂NH₂
- A₄14C4-6**
R₂, R₃ = CH₃;
R₁ = CH₂CH₂N(CH₃)₂
- A₄14C4-7**
R₁, R₂, R₃ = CH₂CH₂OH
- A₄14C4-8**
R₁, R₂, R₃ = CH₂CH₂NH₂



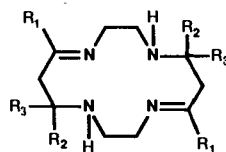
- A₄14C4-30**
(racemic)
- A₄14C4-31**
(meso)

A₄14C4-39

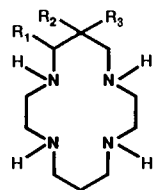
- A₄14C4-9**
R₁, R₂, R₃ = CH₂CH₂CN
- A₄14C4-10**
R₁, R₂, R₃ = CH₂CO₂H
- A₄14C4-11**
R₁, R₂, R₃ = CH₂PO₃H₂
- A₄14C4-12**
R₁, R₂, R₃ = CH₂P(O)₂
(C₆H₅)₂
- A₄14C4-13**
R₁, R₂, R₃ = CH₂CH₂P(O)₂
(C₆H₅)₂
- A₄14C4-14**
R₁, R₃ = H;
R₂ = CH₂[4-C(O)(pyrid-2-yl)CH₂NH]C₆H₄]



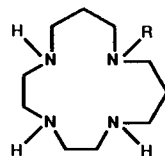
- A₄14C4-32**
R₁ = CH₂CO₂H
R₂ = H; R₃ = CH₃
- A₄14C4-33**
R₁ = CH₂CO₂H;
R₂, R₃ = CH₃
- A₄14C4-34**
R₁ = H; R₂, R₃ = F



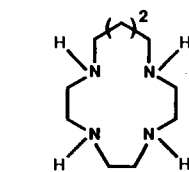
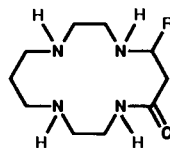
- A₄14C4-diene-1**
R₁ = CH₃; R₂, R₃ = H
- A₄14C4-diene-2**
R₁, R₂ = CH₃; R₃ = H
- A₄14C4-diene-3**
R₁, R₂, R₃ = CH₃



- A₄14C4-15**
R₁, R₂ = H; R₃ = CH₃
- A₄14C4-16**
R₁, R₂ = H; R₃ = C₂H₅
- A₄14C4-17**
R₁, R₂ = H; R₃ = C₃H₇
- A₄14C4-18**
R₁, R₂ = H; R₃ = C₄H₉
- A₄14C4-19**
R₁, R₂ = H; R₃ = CH₂C₆H₅
- A₄14C4-20**
R₁, R₂ = H; R₃ = CH₂[1-Nap]
- A₄14C4-21**
R₁, R₂ = H; R₃ = (CH₂)₄NH₂
- A₄14C4-22**
R₂, R₃ = H; R₁ = 2-HOC₆H₄
- A₄14C4-23**
R₂, R₃ = H; R₁ = 2-HO-3-
CH₂OC₆H₅
- A₄14C4-24**
R₂, R₃ = H;
R₁ = 2-HO-5-NO₂C₆H₃
- A₄14C4-25**
R₂, R₃ = H; R₁ = 2-HO-3,5-
(NO₂)₂C₆H₂
- A₄14C4-26**
R₁, R₂ = H; R₃ = F
- A₄14C4-27**
R₁, R₂ = H; R₃ = CH₂CH₂-
[2-C₆H₄N]
- A₄14C4-28**
R₁ = H; R₂ = F; R₃ = CH₃
- A₄14C4-29**
R₁ = H; R₂, R₃ = F

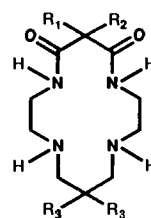


- A₄14C4-35**
R = H;
- A₄14C4-36**
R = (CH₂)₂NH₂
- A₄14C4-37**
R = (CH₂)₃NH₂

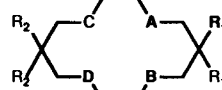
A₄14C4-38

- KA₄14C4-1**
R = H
- KA₄14C4-2**
R = 2-C₅H₄N
- KA₄14C4-3**
R = C₆H₅
- KA₄14C4-4**
R = 2-HOC₆H₄
- KA₄14C4-5**
R = 2-HO-5-NO₂C₆H₃

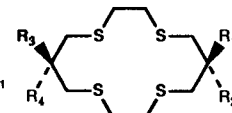
CHART VI



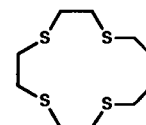
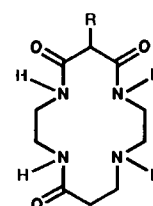
- K₂A₄14C4-1**
R₁, R₂, R₃ = H
- K₂A₄14C4-2**
R₁, R₃ = H; R₂ = CH₃
- K₂A₄14C4-3**
R₁, R₃ = H; R₂ = C₂H₅
- K₂A₄14C4-4**
R₁, R₃ = H; R₂ = C₃H₇
- K₂A₄14C4-5**
R₁, R₃ = H; R₂ = C₄H₉
- K₂A₄14C4-6**
R₁, R₃ = H;
R₂ = CH₂CH₂-
[2-C₆H₄N]
- K₂A₄14C4-7**
R₁, R₃ = H; R₂ = F
- K₂A₄14C4-8**
R₁, R₃ = H;
R₂ = (CH₂)₄NH₂
- K₂A₄14C4-9**
R₁, R₃ = H; R₂ = CH₂C₆H₅
- K₂A₄14C4-10**
R₁, R₃ = H;
R₂ = CH₂CH₂C₆H₅
- K₂A₄14C4-11**
R₁, R₃ = H;
R₂ = CH₂CH₂[2-C₅H₄N]
- K₂A₄14C4-12**
R₁, R₃ = H;
R₂ = CH₂CH₂-
[2-C₅H₄N-O]
- K₂A₄14C4-13**
R₁, R₂ = F; R₃ = H
- K₂A₄14C4-14**
R₁ = F; R₂ = CH₃; R₃ = H
- K₂A₄14C4-15**
R₁, R₂, R₃ = F



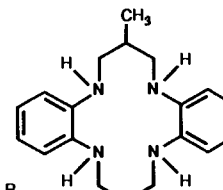
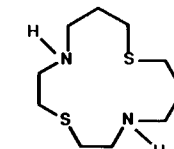
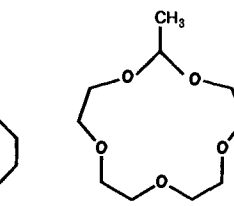
- A₃T₁₄C4-1**
A, B, C = NH; D = S;
R₁, R₂ = H
- A₂T₂14C4-1**
A, B = NH; C, D = S;
R₁, R₂ = H
- A₂T₂14C4-2**
A, C = NH; B, D = S;
R₁, R₂ = H
- A₂T₂14C4-3**
A, D = NH; B, C = S;
R₁, R₂ = H
- AT₃14C4-1**
A = NH; B, C, D = S;
R₁, R₂ = H
- T₄14C4-1**
A, B, C, D = S; R₁, R₂ = H
- T₄14C4-2**
A, B, C, D = S; R₁ = CH₃; R₂ = H
- T₄14C4-3**
A, B, C, D = S; R₁, R₂ = CH₃



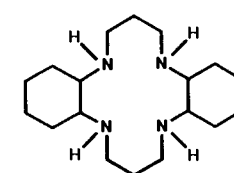
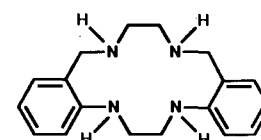
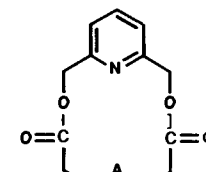
- T₄14C4-4**
R₁, R₂, R₃ = H;
R₄ = OH
- T₄14C4-5**
R₁, R₃ = H;
R₂, R₄ = OH (cis)
- T₄14C4-6**
R₁, R₄ = H;
R₂, R₃ = OH (trans)
- T₄14C4-7**
R₁, R₃ or R₄ = H
R₂, R₄ or R₃ = OH
(cis + trans)

T₄14C4-8

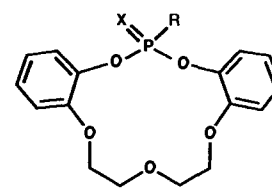
- K₃A₄14C4-1**
R = H
- K₃A₄14C4-2**
R = CH₂CH₂C₆H₅
- K₃A₄14C4-3**
R = CH₂CH₂[2-
C₅H₄N]
- K₃A₄14C4-4**
R = CH₂CH₂[2-
C₅H₄N-O]

B₂A₄14C4-2A₂T₂14C4-4

14C5-1

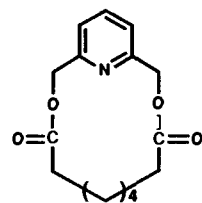
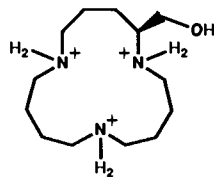
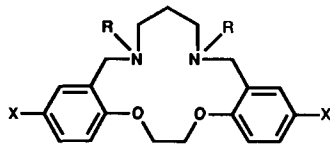
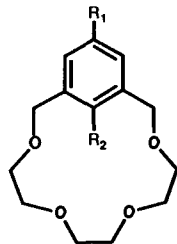
Cy₂A₄14C4-1B₂A₄14C4-1

- K₂PyT₁₄C4-1**
A = S
- K₂PyT₁₄C4-2**
A = SO

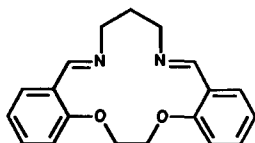
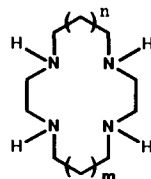


- PhosB₂14C6-1**
R = CH₃; X = O
- PhosB₂14C6-2**
R = *i*-C₄H₉; X = O
- PhosB₂14C6-3**
R = C₆H₅; X = O
- PhosB₂14C6-4**
R = CH₃; X = S
- PhosB₂14C6-5**
R = C₆H₅; X = S

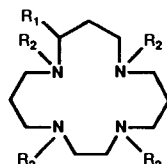
CHART VII

**K₂Py15C3-1****A₃15C3-1**

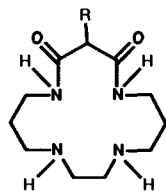
B₂A₂15C4-1
R = H; X = H
B₂A₂15C4-2
R = CH₂CO₂H; X = H
B₂A₂15C4-3
R = H; X = Cl

**B₂A₂15C4-diene-1**

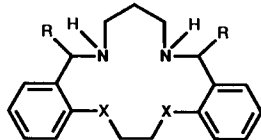
A₄15C4-1
n = 3; m = 0
A₄15C4-2
n = 2; m = 1



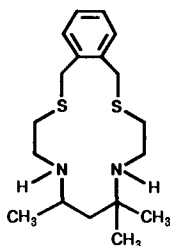
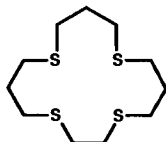
A₄15C4-3
R₁, R₂ = H
A₄15C4-4
R₁ = H; R₂ = CH₃
A₄15C4-5
R₁ = H;
R₂ = CH₂CO₂H
A₄15C4-6
R₁ = 2-HOC₆H₄;
R₂ = H



K₂A₄15C4-1
R = H
K₂A₄15C4-2
R = CH₂CH₂C₆H₅
K₂A₄15C4-3
R = CH₂CH₂;
[2-C₉H₄N]



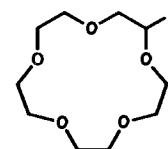
B₂A₄15C4-1
R = H; X = NH
B₂A₄15C4-2
R = C₂H₅; X = NH
B₂A₄15C4-3
R = C₃H₇; X = NH
B₂A₄15C4-4
R = C₄H₉; X = NH
B₂A₂T₂15C4-1
R = H; X = S

**BA₂T₂15C4-1****T₄15C4-1**

(1,3-B)15C4-1
R₁, R₂ = H
(1,3-B)15C4-2
R₁ = H; R₂ = OH
(1,3-B)15C4-3
R₁ = NO₂; R₂ = OH
(1,3-B)15C4-4
R₁ = H; R₂ = OCH₃
(1,3-B)15C4-5
R₁ = CH₃; R₂ = OCH₃

(1,3-B)15C4-6
R₁ = H; R₂ = CO₂H
(1,3-B)15C4-7
R₁ = H; R₂ = CO₂CH₃
(1,3-B)15C4-8
R₁ = H; R₂ = SO₃H
(1,3-B)15C4-9
R₁ = N=N[2,4-(NO₂)₂C₆H₃]
R₂ = OH

CHART VIII

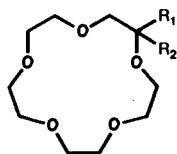


15C5-1
R = H
15C5-2
R = C₂H₅
15C5-3
R = C₆H₁₃
15C5-4
R = C₆H₁₇
15C5-5
R = C₁₀H₂₁
15C5-6
R = C₁₂H₂₅
15C5-7
R = CH₂OH
15C5-8
R = CH₂OCH₃
15C5-9
R = CH(OC₂H₅)₂ (d, l)
15C5-10
R = CH₂OCH₂CH=CH₂
15C5-11
R = CH₂OC(CH₃)₃
15C5-12
R = CH₂OC₃H₇
15C5-13
R = CH₂CO₂CH₃
15C5-14
R = CH₂OC₈H₁₇
15C5-15
R = C₆H₅
15C5-16
R = CH₂OC₆H₅
15C5-17
R = CH₂OCH₂C₆H₅
15C5-18
R = CH₂O-[2-CH₃OC₆H₄]
15C5-19
R = CH₂O-[3-CH₃OC₆H₄]
15C5-20
R = CH₂O-[4-CH₃OC₆H₄]
15C5-21
R = CH₂OCH₂-[2-CH₃OC₆H₄]

15C5-22
R = CH₂O-[2-NO₂C₆H₄]
15C5-23
R = CH₂O-[4-NO₂C₆H₄]
15C5-24
R = CH₂O-[2-CH₂=CH-CH₂OC₆H₄]
15C5-25
R = CH₂O-[2-CH₂=C(CH₃)-CH₂OC₆H₄]
15C5-26
R = CH₂O-[2-OH-3,5-(NO₂)₂C₆H₃]
15C5-27
R = CH₂O-[2-CH₃O-4-(C₃H₇)C₆H₃]
15C5-28
R = CH₂O-[2-CH₃O-4-(CH₂CH=CH₂)C₆H₃]
15C5-29
R = CH₂O-[2-(CH₃O-4-CH₃CH(OH)CH₂)C₆H₃]
15C5-30
R = CH₂O-[2-HO-5-(N=N-4-NO₂C₆H₄)C₆H₃]
15C5-31
R = CH₂O-[2-(CH₂-CHCH₂)OC₆H₄]
15C5-32
R = CH₂O-[2-(CH₂-C(CH₃)-CH₂)OC₆H₄]
15C5-33
R = CH₂OCH₂CH(OH)CH₃
15C5-34
R = CH₂OCH₂CH(OH)CH₂OH
15C5-35
R = CH₂OCH₂CH-CH₂
O
O
CH₃ CH₃

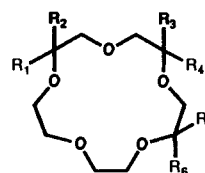
15C5-36
R = CH₂OCH₂CH(OC₆H₁₃)CH₂OC₆H₁₃
15C5-37
R = CH₂OCH₂CH-CH₂
O
15C5-38
R = CH₂OCH₂CH(OH)-CH₂Morpholine
15C5-39
R = CH₂OCH₂CH(OH)-CH₂Adenosine
15C5-40
R = CH₂OCH₂CH₂OCH₃
15C5-41
R = CH₂OCH₂CH₂OCH₄H₉
15C5-42
R = CH₂OCH₂CH₂OC₈H₁₇
15C5-43
R = CH₂O(CH₂CH₂O)₂CH₃
15C5-44
R = CH₂O(CH₂CH₂O)₂C₆H₁₃
15C5-45
R = CH₂O(CH₂CH₂O)₃H
15C5-46
R = CH₂O(CH₂CH₂O)₃CH₃
15C5-47
R = CH₂NH₂
15C5-48
R = CH₂NHC(CH₃)₃
15C5-49
R = CH₂NHC₆H₁₃
15C5-50
R = CH₂NHC₆H₅
15C5-51
R = CH₂NHCH₂CH₂NH₂
15C5-52
R = CH₂O-[1-Nap]
15C5-53
R = CH₂O-[8-Quin]

CHART IX

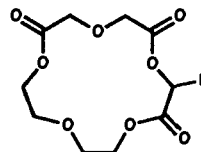


- | | | |
|--|---|--|
| 15C5-54
R ₁ , R ₂ = CH ₃ | 15C5-67
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OC ₈ H ₁₇ | 15C5-79
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ OCH ₃ |
| 15C5-55
R ₁ = CH ₃ ; R ₂ = CH ₂ Br | 15C5-68
R ₁ = CH ₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ OC ₈ H ₁₇ | 15C5-80
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₃ OCH ₃ |
| 15C5-56
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OH | 15C5-69
R ₁ = CH ₃ ;
R ₂ = CH ₂ OC ₁₂ H ₂₅ | 15C5-81
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ OC ₆ H ₁₃ |
| 15C5-57
R ₁ = CH ₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ OH | 15C5-70
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OC ₁₂ H ₂₅ | 15C5-82
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ OC ₈ H ₁₇ |
| 15C5-58
R ₁ = CH ₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₃ OH | 15C5-71
R ₁ = CH ₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ C ₁₂ H ₂₅ | 15C5-83
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OC ₈ H ₁₇ |
| 15C5-59
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OCH ₃ | 15C5-72
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ [2-C ₅ H ₄ N] | 15C5-84
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ OC ₈ H ₁₇ |
| 15C5-60
R ₁ = CH ₃ ;
R ₂ = CH ₂ O(CH ₂ CH ₂ O) ₂ CH ₃ | 15C5-73
R ₁ = CH ₃ ;
R ₂ = CH ₂ OCH ₂ [2-THF] | 15C5-85
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ O-[8-Quin] |
| 15C5-61
R ₁ = CH ₃ ;
R ₂ = CH ₂ O(CH ₂ CH ₂ O) ₃ CH ₃ | 15C5-74
R ₁ = CH ₃ ;
R ₂ = CH ₂ O-[2-CH ₃ OC ₆ H ₄] | 15C5-86
R ₁ = C ₆ H ₁₇ ;
R ₂ = CH ₂ Br |
| 15C5-62
R ₁ = CH ₃ ;
R ₂ = CH ₂ O(CH ₂) ₃ OCH ₃ | 15C5-75
R ₁ = CH ₃ ;
R ₂ = CH ₂ O-[8-Quin] | 15C5-87
R ₁ = C ₆ H ₁₇ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OCH ₃ |
| 15C5-63
R ₁ = CH ₃ ;
R ₂ = CH ₂ OC ₈ H ₁₃ | 15C5-76
R ₁ = CH ₃ ;
R ₂ = CH ₂ O-[2-CH ₃ -8-Quin] | 15C5-88
R ₁ = C ₆ H ₁₇ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₂ OCH ₃ |
| 15C5-64
R ₁ = CH ₃ ;
R ₂ = CH ₂ SC ₆ H ₁₃ | 15C5-77
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ Br | 15C5-89
R ₁ = C ₆ H ₁₇ ;
R ₂ = CH ₂ (OCH ₂ CH ₂) ₃ OCH ₃ |
| 15C5-65
R ₁ = CH ₃ ;
R ₂ = CH ₂ NHC ₆ H ₁₃ | 15C5-78
R ₁ = C ₆ H ₁₃ ;
R ₂ = CH ₂ OCH ₂ CH ₂ OCH ₃ | |
| 15C5-66
R ₁ = CH ₃ ;
R ₂ = CH ₂ OC ₈ H ₁₇ | | |

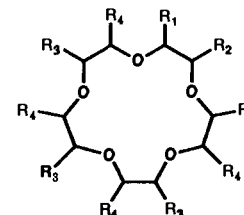
CHART X



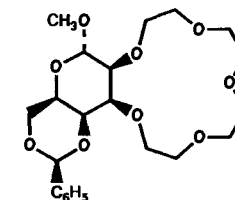
- 15C5-90**
R₁, R₆ = CH₃; R₃, R₄ = H;
R₂, R₅ = CH₂Br
(mixture of isomers)
- 15C5-91**
R₁, R₃, R₄, R₆ = H;
R₂, R₅ = CH₂OCH₂CH₂OCH₃
(mixture of isomers)
- 15C5-92**
R₁, R₆ = CH₃; R₃, R₄ = H;
R₂, R₅ = CH₂OCH₂CH₂OCH₃
(trans)
- 15C5-93**
R₁, R₆ = CH₃; R₃, R₄ = H;
R₂, R₅ = CH₂OCH₂CH₂OCH₃
(cis)
- 15C5-94**
R₁, R₆ = CH₃; R₃, R₄ = H;
R₂, R₅ = CH₂OCH₂CH₂OCH₃
(mixture of isomers)
- 15C5-95**
R₁, R₄ = CH₃; R₂, R₃ = CH₂Br;
R₅, R₆ = H (mixture of isomers)
- 15C5-96**
R₁, R₃ = CH₃;
R₂, R₄ = CH₂OCH₂CH₂OCH₃;
R₅, R₆ = H (trans)
- 15C5-97**
R₁, R₃ = CH₃;
R₂, R₄ = CH₂OCH₂CH₂OCH₃;
R₅, R₆ = H (mixture of isomers)



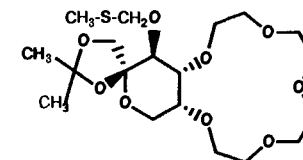
- K₃15C5-1**
R = H
- K₃15C5-2**
R = CH₂C₆H₅



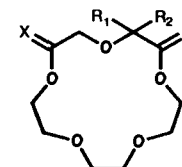
- 15C5-98**
R₃, R₄ = H; R₁ = CO₂H;
R₂ = C(O)NHC₈H₁₇
- 15C5-99**
R₃, R₄ = H; R₁ = CO₂H;
R₂ = C(O)NHC₁₈H₃₇
- 15C5-100**
R₂, R₄ = H; R₁, R₃ = CH₃



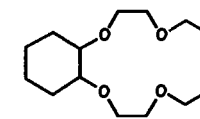
15C5-101 (d)



15C5-102 (d)

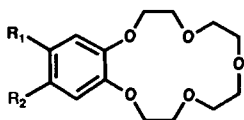


- K15C5-1**
X = H₂; R₁, R₂ = H
- K15C5-2**
X = H₂; R₁ = H;
R₂ = C₆H₁₃
- K₂15C5-1**
X = O; R₁, R₂ = H

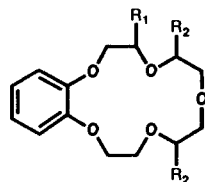


Cy15C5-1

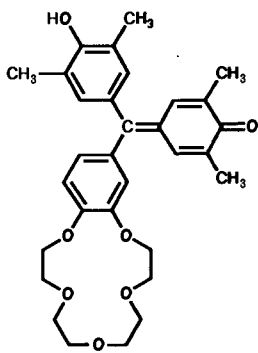
CHART XI



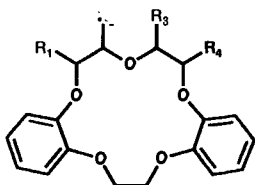
- B15C5-1**
R₁, R₂ = H
- B15C5-2**
R₁ = H; R₂ = Br
- B15C5-3**
R₁ = H; R₂ = NH₂
- B15C5-4**
R₁ = H; R₂ = NO₂
- B15C5-5**
R₁ = H; R₂ = CH₃
- B15C5-6**
R₁ = H; R₂ = C₂H₅
- B15C5-7**
R₁ = H; R₂ = t-C₄H₉
- B15C5-8**
R₁ = H; R₂ = CH₂CH(CO₂H)·NHCO₂CH₂C₆H₅
- B15C5-9**
R₁ = H; R₂ = C(O)CH₃
- B15C5-10**
R₁ = H; R₂ = CO₂C₂H₅
- B15C5-11**
R₁ = H; R₂ = CO₂(CH₂CH₂O)₃C₈H₁₇
- B15C5-12**
R₁ = H; R₂ = CO₂(CH₂CH₂O)₃C₁₂H₂₅
- B15C5-13**
R₁ = H; R₂ = CO₂(CH₂CH₂O)₅C₁₂H₂₅
- B15C5-14**
R₁ = H; R₂ = C(O)NHC₆H₁₁
- B15C5-15**
R₁ = H; R₂ = C(O)N⁻·N⁺(CH₃)₂·CH₂CH(OH)C₁₀H₂₁
- B15C5-16**
R₁ = H; R₂ = NHC(O)CH₃
- B15C5-17**
R₁ = H; R₂ = C(O)C₆H₅
- B15C5-18**
R₁ = H; R₂ = NHC(O)CH=CH₂
- B15C5-19**
R₁ = H; R₂ = N=N[2-HO-1-Nap]
- B15C5-20**
R₁ = H; R₂ = N=N[4-HOC₆H₄]
- B15C5-21**
R₁ = H; R₂ = N=N[3-(t-C₄H₉)·4-HOC₆H₃]
- B15C5-22**
R₁ = H; R₂ = N=N[3-Cl-4-HOC₆H₃]
- B15C5-23**
R₁ = H; R₂ = N=N[4-(CH₃)₂NC₆H₄]
- B15C5-24**
R₁ = H; R₂ = N=N[4-(CH₃O₂CCH₂CH₂)₂NC₆H₄]
- B15C5-25**
R₁ = H; R₂ = N=N[4-(HOCH₂CH₂)₂NC₆H₄]
- B15C5-26**
R₁ = H; R₂ = C≡C[4-(4-CNC₆H₄)C₆H₄]
- B15C5-27**
R₁ = H; R₂ = PO₃H₂



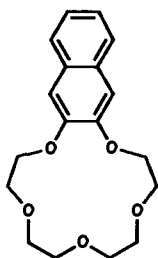
- B15C5-28**
R₁ = CH₃; R₂ = H
- B15C5-29**
R₁ = H; R₂ = CH₃



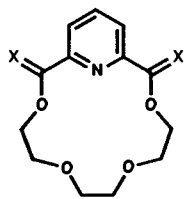
B15C5-30



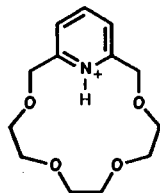
- B₂15C5-1**
R₁, R₂, R₃, R₄ = H
- B₂15C5-2**
R₁, R₄ = H; R₂, R₃ = CH₃ (d, l)
- B₂15C5-3**
R₂, R₃ = H; R₁, R₄ = CH₃ (d, l)
- B₂15C5-4**
R₂, R₃ = H; R₁, R₄ = CH₃ (meso)



(2,3-Nap)15C5-1

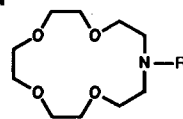


- Py15C5-1**
X = H₂
- K₂Py15C5-1**
X = O

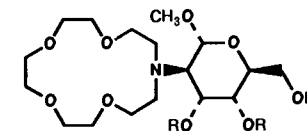


Py15C5-2

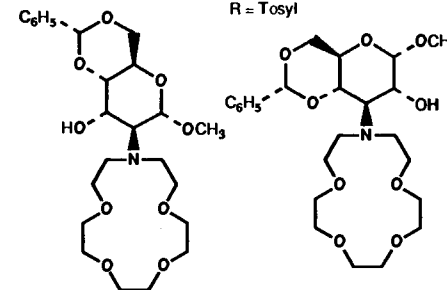
CHART XII



- A15C5-1**
R = H
- A15C5-2**
R = CH₃
- A15C5-3**
R = C₄H₉
- A15C5-4**
R = t-C₄H₉
- A15C5-5**
R = C₇H₁₅
- A15C5-6**
R = C₈H₁₇
- A15C5-7**
R = C₁₂H₂₅
- A15C5-8**
R = CH₂CH₂OH
- A15C5-9**
R = CH₂CH=CH₂
- A15C5-10**
R = CH₂CO₂C(CH₃)₃
- A15C5-11**
R = CH₂CH(OH)CH₃
- A15C5-12**
R = CH₂CH(OH)·CH₂Morpholine
- A15C5-13**
R = CH₂CH(OH)·CH₂Adenosine
- A15C5-14**
R = CH₂CH(OH)C₈H₁₇
- A15C5-15**
R = C₆H₅
- A15C5-16**
R = 2-CH₂OC₆H₄
- A15C5-17**
R = 4-CH₂OC₆H₄
- A15C5-18**
R = CH₂C₆H₅
- A15C5-19**
R = CH₂[4-ClC₆H₄]
- A15C5-20**
R = CH₂[2-CNC₆H₄]
- A15C5-21**
R = CH₂[4-CNC₆H₄]
- A15C5-22**
R = CH₂[2-CH₃OC₆H₄]
- A15C5-23**
R = CH₂[4-CH₃OC₆H₄]
- A15C5-24**
R = CH₂[2-NO₂C₆H₄]
- A15C5-25**
R = CH₂[4-NO₂C₆H₄]
- A15C5-26**
R = CH₂[2-HO-5-NO₂C₆H₃]
- A15C5-27**
R = CH₂[2-C₆H₄]NH-[2,4,6-(NO₂)₃C₆H₂]
- A15C5-28**
R = CH₂CH₂SC₆H₅
- A15C5-29**
R = 4-benzoxazinone-CH=CHC₆H₄
- A15C5-30**
R = CH₂CH₂OCH₃
- A15C5-31**
R = (CH₂CH₂O)₂CH₃
- A15C5-32**
R = (CH₂CH₂O)₃CH₃
- A15C5-33**
R = (CH₂CH₂O)₄CH₃
- A15C5-34**
R = (CH₂CH₂O)₅CH₃
- A15C5-35**
R = (CH₂CH₂O)₈CH₃
- A15C5-36**
R = CH₂CH₂OC₈H₁₇
- A15C5-37**
R = (CH₂CH₂O)₂C₈H₁₇
- A15C5-38**
R = (CH₂CH₂O)₃C₈H₁₇
- A15C5-39**
R = CH₂CH₂OC₁₂H₂₅
- A15C5-40**
R = (CH₂CH₂O)₂C₁₂H₂₅
- A15C5-41**
R = (CH₂CH₂O)₂C₆H₅
- A15C5-42**
R = CH₂CH(C₈H₁₇)OCH₃
- A15C5-43**
R = CH₂CH(C₈H₁₇)O·CH₂CH₂OCH₃
- A15C5-44**
R = CH₂CH(C₈H₁₇)O·(CH₂CH₂O)₂CH₃
- A15C5-45**
R = CH₂CH₂SCH₃
- A15C5-46**
R = CH₂CH₂SOCH₃ (racemic)
- A15C5-47**
R = CH₂PO₃H₂
- A15C5-48**
R = CH₂(O)O cholesteryl
- A15C5-49**
R = CH₂(O)O·dihydrocholesteryl
- A15C5-50**
R = C(O)O cholesteryl
- A15C5-51**
R = CH₂CO₂C₂H₅

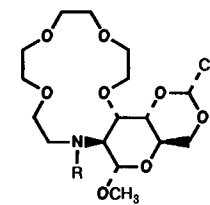


- A15C5-52**
R = COCH₃
- A15C5-53**
R = Tosyl

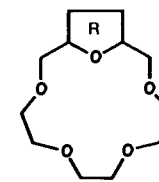


A15C5-54

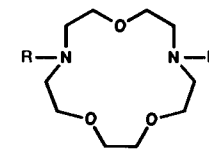
A15C5-55



- A15C5-56**
R = H
- A15C5-57**
R = C₂H₅

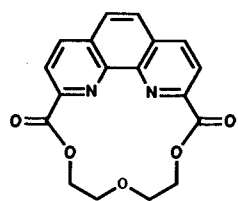
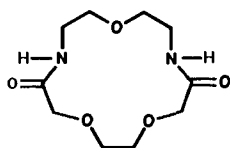
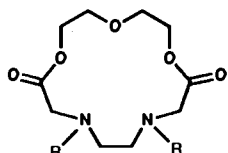
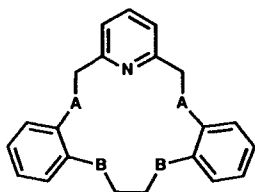


- Fur15C5-1**
R = furan
- THF15C5-1**
R = THF

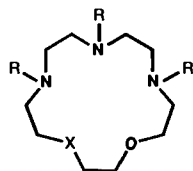


- A₂15C5-1**
R = H
- A₂15C5-2**
R = CH₃
- A₂15C5-3**
R = CH₂CH₂OH
- A₂15C5-4**
R = CH₂CH₂OCH₃
- A₂15C5-5**
R = CH₂CH(OH)CH₃
- A₂15C5-6**
R = (CH₂)₃NH₂
- A₂15C5-7**
R = CH₂CH₂OCH₃
- A₂15C5-8**
R = CH₂CO₂H
- A₂15C5-9**
R = CH₂CO₂C₂H₅
- A₂15C5-10**
R = CH₂C₆H₅
- A₂15C5-11**
R = CH₂[2-CH₃O·C₆H₄]
- A₂15C5-12**
R = CH₂[2-Fur]

CHART XIII

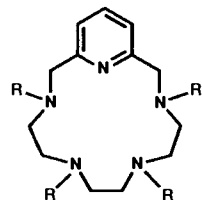
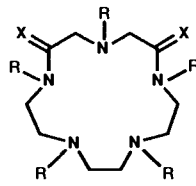
 $K_2\text{Phen}15\text{C}5-1$  $K_2A_215\text{C}5-1$  $K_2A_215\text{C}5-2$
 $R = \text{CH}_2\text{CO}_2\text{H}$  $\text{Py}B_2A_215\text{C}5-1$

$A = O; B = \text{NH}$
 $\text{Py}B_2A_215\text{C}5-2$
 $A = \text{NH}; B = O$

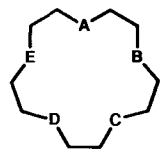
 $A_315\text{C}5-1$
 $R = \text{H}; X = O$

$A_315\text{C}5-2$
 $R = \text{CH}_2\text{CH}(\text{OH})\text{CH}_3$
 $X = O$

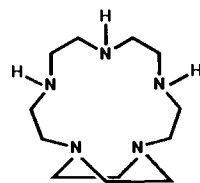
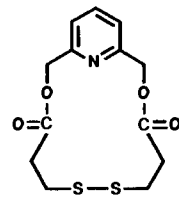
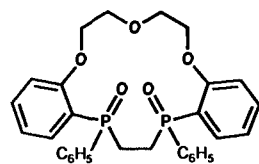
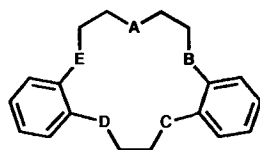
$A_415\text{C}5-1$
 $R = \text{H}; X = \text{NH}$

 $\text{Py}A_415\text{C}5-1$
 $R = \text{CH}_2\text{CO}_2\text{H}$ 

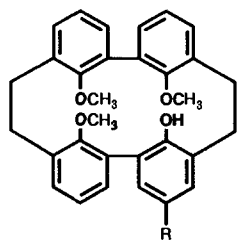
$A_515\text{C}5-1$
 $X = \text{H}_2; R = \text{H}$
 $A_515\text{C}5-2$
 $X = \text{H}_2;$
 $R = \text{CH}_2\text{CO}_2\text{H}$
 $K_2A_515\text{C}5-1$
 $X = O; R = \text{H}$

 $T_215\text{C}5-1$

$A, C, D = O; B, E = S$
 $A_2T_315\text{C}5-1$
 $A, B = \text{NH}; C, D, E = S$
 $AT_415\text{C}5-1$
 $A = \text{NH}; B, C, D, E = S$
 $T_515\text{C}5-1$
 $A, B, C, D, E = S$

 $A_315\text{C}5-3$  $K_2\text{Py}T_215\text{C}5-1$  $(\text{Phos})_2B_215\text{C}5-1$ 

$B_2A_2T_15\text{C}5-1$
 $A = S; B, E = \text{NH};$
 $C, D = O$
 $B_2A_2T_315\text{C}5-1$
 $A, C, D = S;$
 $B, E = \text{NH}$



Spher-16C-1
 $R = \text{N}=\text{N}-[2,4-(\text{NO}_2)_2\text{C}_6\text{H}_3]$

CHART XIV

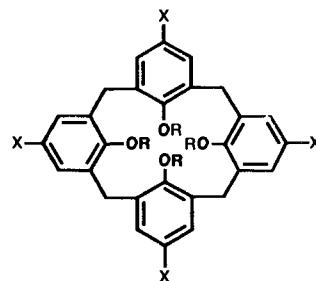
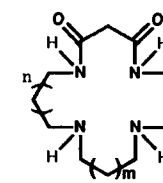
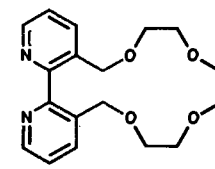
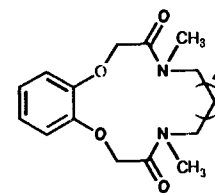
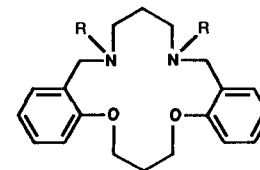
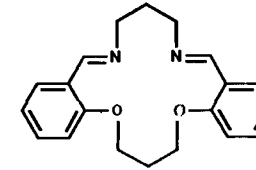
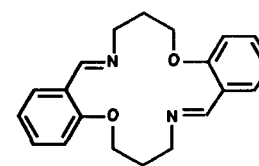
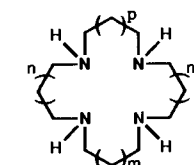
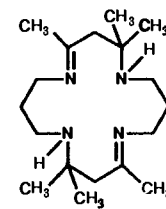
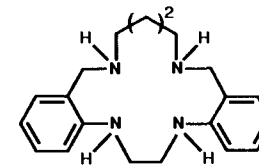
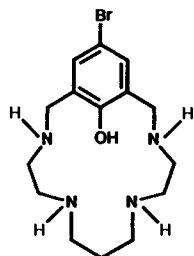
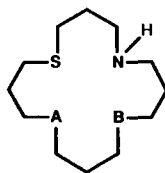
 $\text{Callx}4-16\text{C-1}$ $R = \text{H}; X = \text{SO}_3\text{Na}$ $\text{Callx}4-16\text{C-2}$ $R = \text{H}; X = \text{NO}_2$ $\text{Callx}4-16\text{C-3}$ $R = \text{H}; X = \text{CH}_2\text{CH}=\text{CH}_2$ $\text{Callx}4-16\text{C-4}$ $R = \text{H}; X = \text{CH}_2\text{N}$ $\text{Callx}4-16\text{C-5}$ $R = \text{H}; X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-6}$ $R = \text{CH}_2\text{CO}_2\text{H};$ $X = \text{SO}_3\text{Na}$ $\text{Callx}4-16\text{C-7}$ $R = \text{CH}_2\text{C}(\text{O})\text{CH}_3;$ $X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-8}$ $R = \text{CH}_2\text{C}(\text{O})t\text{-C}_4\text{H}_9;$ $X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-9}$ $R = \text{CH}_2\text{C}(\text{O})\text{C}_6\text{H}_5;$ $X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-10}$ $R = \text{CH}_2\text{CO}_2\text{C}_2\text{H}_5;$ $X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-11}$ $R = \text{CH}_2\text{CO}_2(t\text{-C}_4\text{H}_9);$ $X = t\text{-C}_4\text{H}_9$ $\text{Callx}4-16\text{C-12}$ $R = \text{CH}_2\text{CON}(\text{C}_2\text{H}_5)_2; X = t\text{-C}_4\text{H}_9$  $K_2A_416\text{C}4-1$ $m = 3; n = 0$ $K_2A_416\text{C}4-2$ $m, n = 1$  $\text{Py}_216\text{C}4-t$  $K_2BA_216\text{C}4-1$  $B_2A_216\text{C}4-1$ $R = \text{H}$ $B_2A_216\text{C}4-2$ $R = \text{CH}_2\text{CO}_2\text{H}$  $B_2A_216\text{C}4\text{-diene-1}$  $B_2A_216\text{C}4\text{-diene-2}$  $A_416\text{C}4-1$ $m = 2; n = 1; p = 0$ $A_416\text{C}4-2$ $m = 3; n = 0; p = 1$ $A_416\text{C}4-3$ $m, n = 0; p = 4$ $A_416\text{C}4-4$ $m, n, p = 1$  $A_416\text{C}4\text{-diene-1}$  $B_2A_416\text{C}4-1$

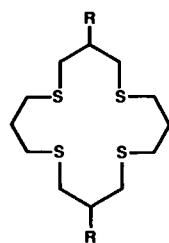
CHART XV



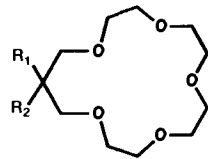
(1,3-B)A₄16C4-1



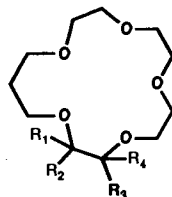
A₂T₂16C4-1
A = S; B = NH
A₂T₂16C4-2
A = NH; B = S



T₄16C4-1
R = H
T₄16C4-2
R = OH



16C5-1
R₁, R₂ = H
16C5-2
R₁ = H; R₂ = OH
16C5-3
R₁ = CH₃;
R₂ = OCH₂CH₂OCH₃
16C5-4
R₁ = CH₃;
R₂ = O(CH₂CH₂O)₂CH₃
16C5-5
R₁ = CH₃;
R₂ = CH₂OCH₂CH₂OCH₃
16C5-6
R₁ = CH₃;
R₂ = CH₂(OCH₂CH₂)₂OCH₃
16C5-7
R₁, R₂ = CH₂OC₁₂H₂₅
16C5-8
R₁, R₂ = -CH₂OCH₂-
(ring)

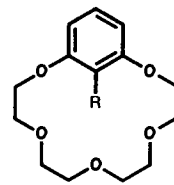


16C5-9
R₁, R₂ = H; R₃ = CH₃;
R₄ = CH₂Br
16C5-10
R₁, R₂ = H; R₃ = CH₃;
R₄ = CH₂OCH₂CH₂OCH₃
16C5-11
R₁, R₂ = H; R₃ = CH₃;
R₄ = CH₂(OCH₂CH₂)₂OCH₃
16C5-12
R₁, R₂ = H; R₃ = CH₃;
R₄ = CH₂O-[8-Quin]
16C5-13
R₁ = CH₃; R₂ = CH₂Br;
R₃, R₄ = H
16C5-14
R₁ = CH₃; R₃, R₄ = H;
R₂ = CH₂OCH₂CH₂OCH₃
16C5-15
R₁ = CH₃; R₃, R₄ = H;
R₂ = CH₂(OCH₂CH₂)₂OCH₃
16C5-16
R₁ = CH₃; R₃, R₄ = H;
R₂ = CH₂O-[8-Quin]

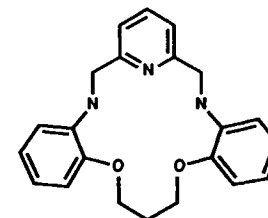
B₂16C5-1
R₁, R₃ = H; R₂ = OCH₂CO₂H
B₂16C5-2
R₁, R₃ = H;
R₂ = OCH₂P(O)(OH)OC₂H₅
B₂16C5-3
R₁, R₃ = H; R₂ = OCH₂CH₂CO₂H
B₂16C5-4
R₁, R₃ = H;
R₂ = OCH(CO₂H)C₂H₅
B₂16C5-5
R₁, R₃ = H; R₂ = O(CH₂)₃SO₃H
B₂16C5-6
R₁, R₃ = H; R₂ = O(CH₂)₄CO₂H
B₂16C5-7
R₁, R₃ = H;
R₂ = OCH(CO₂H)(CH₂)₃CH₃
B₂16C5-8
R₁, R₃ = H;
R₂ = OCH(CO₂H)(CH₂)₅CH₃
B₂16C5-9
R₁, R₂ = H;
R₃ = OCH(CO₂H)(CH₂)₇CH₃
B₂16C5-10
R₁, R₃ = H;
R₂ = OCH(C₆H₁₇)CO₂H

B₂16C5-11
R₁ = C₄H₉; R₃ = H;
R₂ = OCH₂CO₂H
B₂16C5-12
R₁ = C₈H₁₇; R₃ = H;
R₂ = OCH₂CO₂H
B₂16C5-13
R₁ = C₁₀H₂₁; R₃ = H;
R₂ = OCH₂CO₂H
B₂16C5-14
R₁ = C₁₄H₂₉; R₃ = H;
R₂ = OCH₂CO₂H
B₂16C5-15
R₁ = H; R₃ = t-C₄H₉;
R₂ = OCH₂CO₂H
B₂16C5-16
R₁ = H; R₃ = t-C₄H₉;
R₂ = OCH₂P(O)(HO)OC₂H₅
B₂16C5-17
R₁ = H; R₃ = t-C₄H₉;
R₂ = OCH₂CH₂P(O)(HO)-
OC₂H₅
B₂16C5-18
R₁ = H; R₃ = NO₂;
R₂ = OCH₂CO₂H

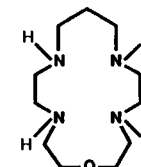
CHART XVI



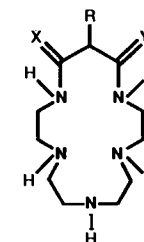
(1,3-B)16C5-1
R = H
(1,3-B)16C5-2
R = (N=C)



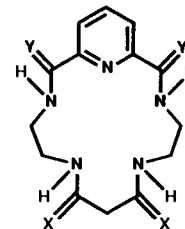
PyB₂A₂16C5-1



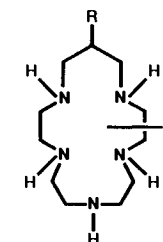
A₄16C5-1



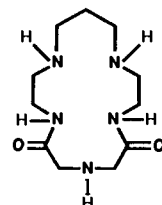
KA₅16C5-1
X = O; Y = H₂; R = H
K₂A₅16C5-1
X, Y = O; R = H
K₂A₅16C5-2
X, Y = O; R = CH₃
K₂A₅16C5-3
X, Y = O; R = C₂H₅
K₂A₅16C5-4
X, Y = O; R = CH₂C₆H₅
K₂A₅16C5-5
X, Y = O; R = CH₂CH₂C₆H₅
K₂A₅16C5-6
X, Y = O; R = CH₂[1-Nap]
K₂A₅16C5-7
X, Y = O;
R = CH₂CH₂[2-C₅H₄N]



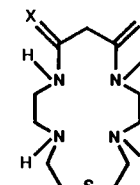
PyA₄16C5-1
X, Y = H₂
K₂PyA₄16C5-1
X = O; Y = H₂
K₂PyA₄16C5-2
X = H₂; Y = O



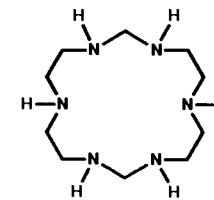
A₃16C5-1
R = H;
X = not present
A₅16C5-2
R = (CH₂)₄NH₂;
X = not present
A₅16C5-3
R = H; X = 3H⁺



K₂A₅16C5-8



A₄T16C5-1
X = H₂
K₂A₄T16C5-1
X = O



A₆16C6-1

CHART XVII

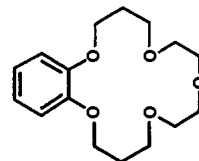
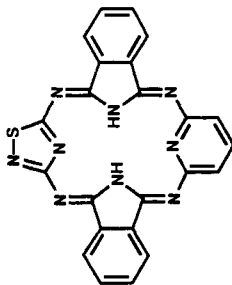
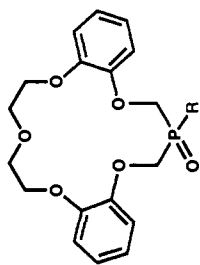
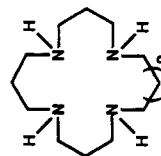
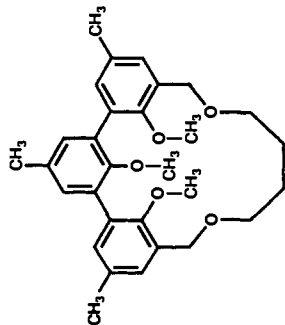
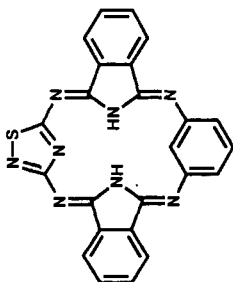
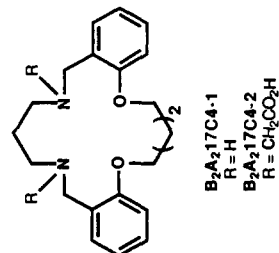
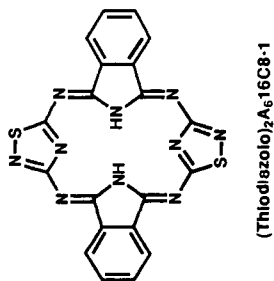
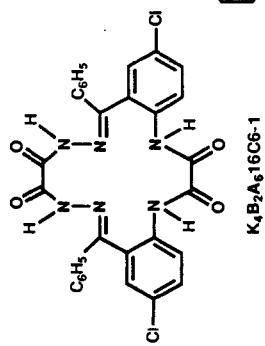


CHART XVIII

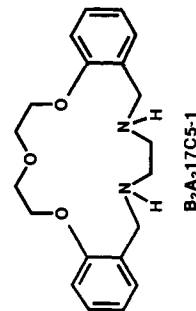
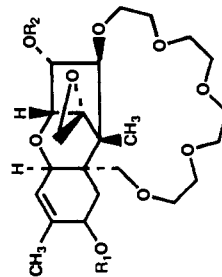
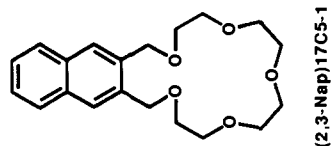
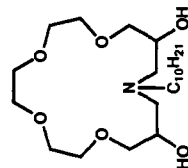
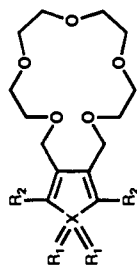
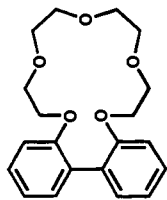
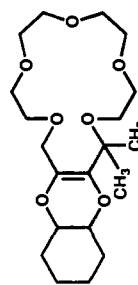
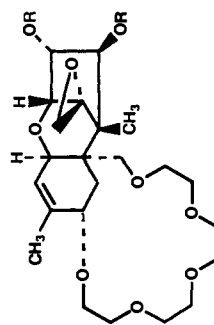
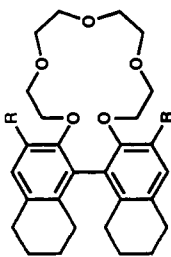
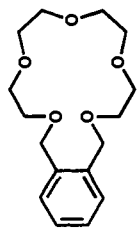
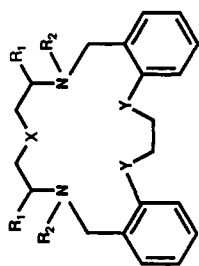
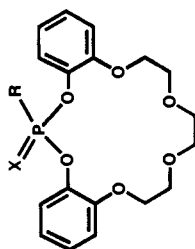


CHART XIX

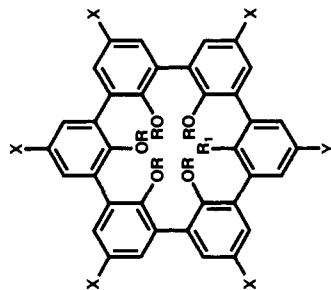


- B₂A₂17C5-2
- X,Y = O; R₁,R₂ = H
- B₂A₃17C5-1
- X = NH; Y = O; R₁,R₂ = H
- B₂A₃17C5-2
- X = NH; Y = O; R₁ = CH₃; R₂ = H
- B₂A₃17C5-3
- X = NH; Y = O; R₁ = CH₃; R₂ = H (meso)
- B₂A₃17C5-4
- X = NCH₃; Y = O; R₁ = H; R₂ = CH₃
- B₂A₃17C5-5
- X = NCH₃CO₂H; Y = O; R₁ = H; R₂ = CH₂CO₂H
- B₂A₃17C5-6
- X = NCH₂C₆H₅; Y = O; R₁ = H; R₂ = CH₂C₆H₅
- B₂A₄17C5-1
- X = O; Y = NH; R₁, R₂ = H
- B₂A₅17C5-1
- X, Y = NH; R₁,R₂ = H
- B₂A₂117C5-1
- X = S; Y = O; R₁, R₂ = H
- B₂A₄117C5-1
- X = S; Y = NH; R₁,R₂ = H
- B₂A₂T₂17C5-1
- X = O; Y = S; R₁,R₂ = H
- B₂A₃T₂17C5-1
- X = NH; Y = S; R₁, R₂ = H
- B₂A₂T₃17C5-1
- X, Y = S; R₁, R₂ = H

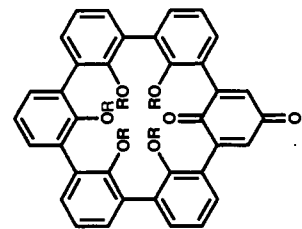
CHART XX



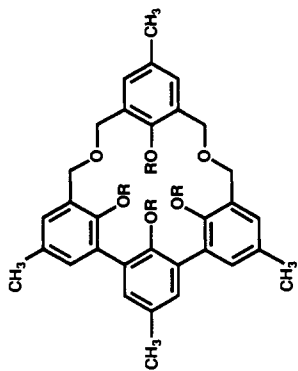
- PhosB₂17C7-1
- X = O; R = CH₃
- PhosB₂17C7-2
- X = O; R = C₆H₅
- PhosB₂17C7-3
- X = O; R = C₆H₅
- PhosB₂17C7-4
- X = O; R = OC₆H₅
- PhosB₂17C7-5
- X = O; R = Adamantyl
- PhosB₂17C7-6
- X = S; R = CH₃
- PhosB₂17C7-7
- X = S; R = C₆H₅



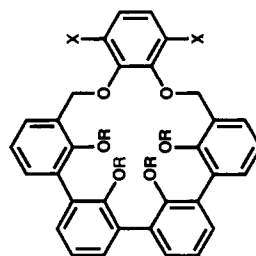
- Spher-18C-1
- R, X, Y = CH₃; R₁ = OCH₃
- Spher-18C-2
- R = CH₃; R₁ = OH; X, Y = H
- Spher-18C-3
- R, X, Y = CH₃; R₁ = OH
- Spher-18C-4
- R, X = CH₃; R₁, Y = H
- Spher-18C-5
- R = CH₃; R₁ = OH; X = H; Y = N=N-[2,4-(NO₂)₂C₆H₃]



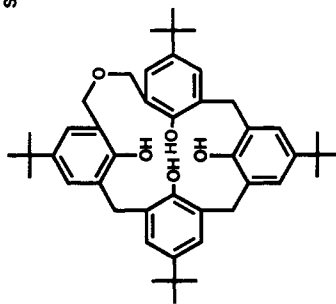
Spher-Quinone18C-1
R = CH₃



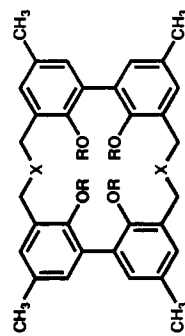
Spher-18C2-5
R = CH₃



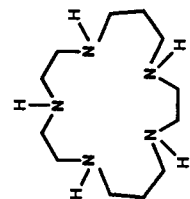
- Spher-B18C2-1
- R = CH₃; X = H
- Spher-B18C2-2
- R = C₂H₅; X = H
- Spher-B18C2-3
- R = CH₂C₆H₅; X = H
- Spher-B18C2-4
- R, X = CH₃



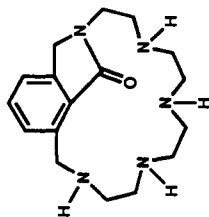
Callix4-18C1-1



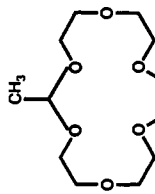
- Spher-18C2-6
- R = CH₃; X = O
- Spher-T₂18C2-1
- R = CH₃; X = S



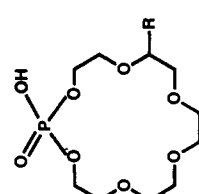
A₅17C5-1



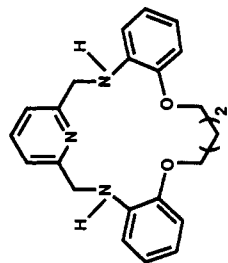
KBA₅17C5-1



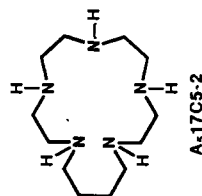
17C6-1



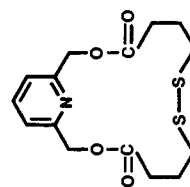
- Phos17C7-1
- R = H
- Phos17C7-2
- R = C₁₀H₂₁



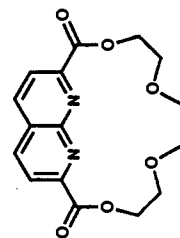
PyB₂A₂17C5-1



A₅17C5-2

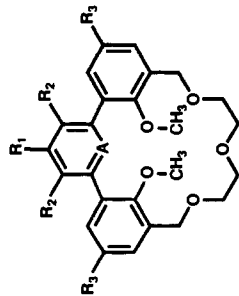
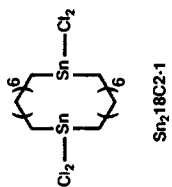
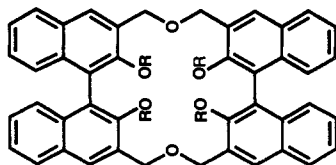


K₂PyT₂17C5-1



K₂Naphthyr17C6-1

CHART XXI



- Spher-18C3-1**
A = COCH₃;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-2**
A = COC₂H₅;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-3**
A = COH;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-4**
A = COCH₃;
R₁ = H; R₂ = CH₃; R₃ = H
- Spher-18C3-5**
A = COCH₃;
R₁ = H; R₂ = CH₃; R₃ = H
- Spher-18C3-6**
A = COCH₃;
R₁ = H; R₂ = CH₃; R₃ = H
- Spher-18C3-7**
A = CNO₂; R₁ = C₆H₅;
R₂ = H; R₃ = CH₃
- Spher-18C3-8**
A = CCON(CH₃)₂;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-9**
A = CCO₂CH₃;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-10**
A = CNH₂;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-11**
A = CNH₂;
R₁, R₂ = CH₃; R₃ = H
- Spher-18C3-12**
A = CSOCH₃; R₁ = CH₃; R₂ = H; R₃ = t-C₄H₉
- Spher-18C3-13**
A = CSOCH₃; R₁ = CH₃; R₂ = H; R₃ = t-C₄H₉
- Spher-18C3-14**
A = CSO₂CH₃; R₁ = H; R₂ = CH₃; R₃ = t-C₄H₉
- Spher-Py18C4-1**
A = N; R₁, R₂ = H; R₃ = CH₃
- Spher-Py18C4-2**
A = N; R₁ = C₆H₅; R₂ = H; R₃ = CH₃
- Spher-Py18C4-3**
A = N; R₁ = H; R₂ = CH₃; R₃ = CH₃
- Spher-Py18C4-4**
A = NO; R₁, R₂ = H; R₃ = CH₃

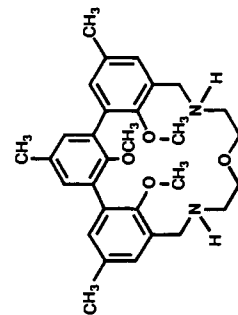
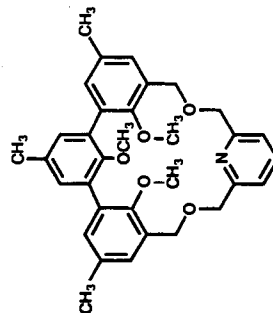
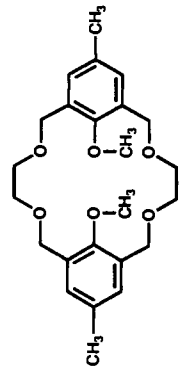
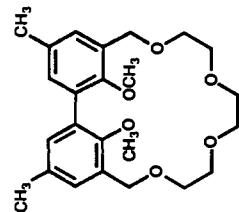
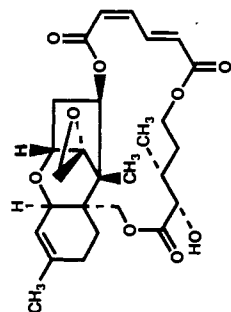
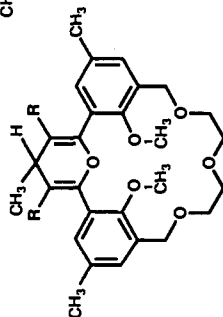
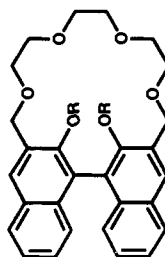


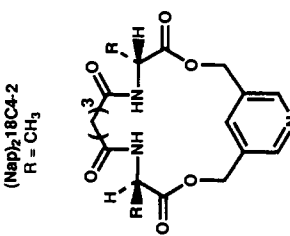
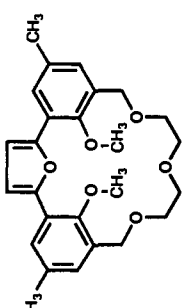
CHART XXII



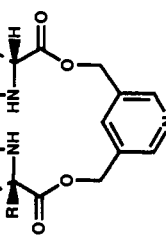
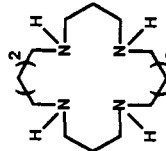
K₂18C3-diene-1
R = C(O)CH₃



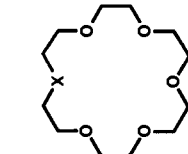
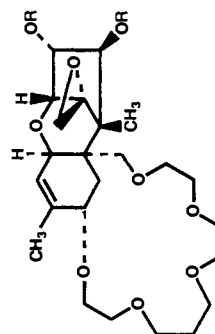
(1,3-B)218C4-1
R = H
Spher-Py18C4-2
R = CH₃



K₄(1,3-B)A₂18C4-1
R = CH(CH₃)₂; X = CH
K₄(3,5-Py)A₂18C4-1
R = CH(CH₃)₂; X = N



A₁18C4-1



K₂18C3-diene-1
R = C(O)CH₃

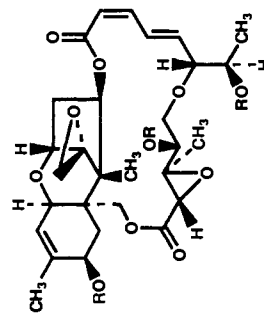
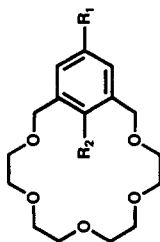
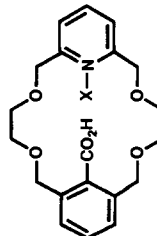


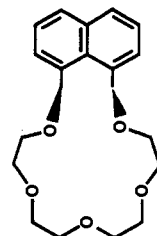
CHART XXIII



- (1,3-B)18C5-1
- R₁, R₂ = H
- (1,3-B)18C5-2
- R₁ = H; R₂ = OH
- (1,3-B)18C5-3
- R₁ = H; R₂ = CO₂H
- (1,3-B)18C5-4
- R₁ = H; R₂ = CO₂CH₃
- (1,3-B)18C5-5
- R₁ = H; R₂ = CH₂OH
- (1,3-B)18C5-6
- R₁ = H; R₂ = OCH₃
- (1,3-B)18C5-7
- R₁ = H; R₂ = CH₂OCH₃
- (1,3-B)18C5-8
- R₁ = H; R₂ = CN
- (1,3-B)18C5-9
- R₁ = CN; R₂ = H
- (1,3-B)18C5-10
- R₁ = t-C₄H₉; R₂ = H
- (1,3-B)18C5-11
- R₁ = OCH₃; R₂ = H
- (1,3-B)18C5-12
- R₁ = CO₂H; R₂ = H
- (1,3-B)18C5-13
- R₁ = SCH₃; R₂ = H
- (1,3-B)18C5-14
- R₁, R₂ = OCH₃
- (1,3-B)18C5-15
- R₁ = CH₃; R₂ = OCH₃
- (1,3-B)18C5-16
- R₁, R₂ = OH
- (1,3-B)18C5-17
- R₁ = NO₂; R₂ = OH
- (1,3-B)18C5-18
- R₁ = Br; R₂ = H
- (1,3-B)18C5-19
- R₁ = N=N-(2,4-(NO₂)₂C₆H₃); R₂ = OH
- (1,3-B)18C5-20
- R₁ = 3,5-(t-C₄H₉)₂-4-O-C₆H₂; R₂ = OCH₃

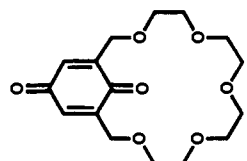


- Py(1,3-B)18C5-1
- X = not present
- Py(1,3-B)18C5-2
- X = H

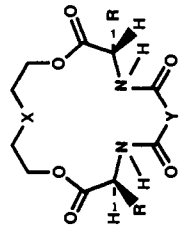


(1,8-Nap)18C5-1

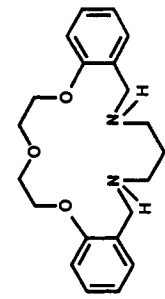
CHART XXIV



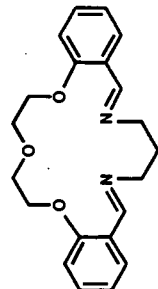
Quinone18C5-1



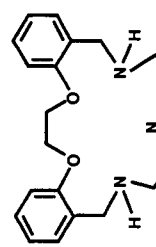
- K₄A₂18C5-1
- X = O; Y = (CH₂)₃
- R = t-C₃H₇
- K₄PvA₂18C5-1
- X = CH₂; Y = 2,6-C₃H₃N
- R = t-C₃H₇



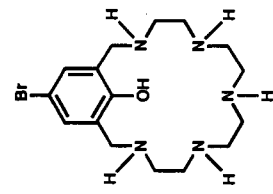
B₂A₂18C5-1



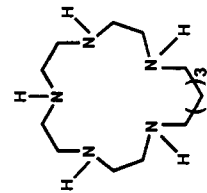
B₂A₂18C5-diene-1



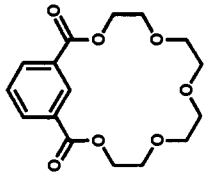
B₂A₃16C5-1



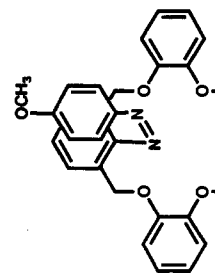
(1,3-B)A₅18C5-1



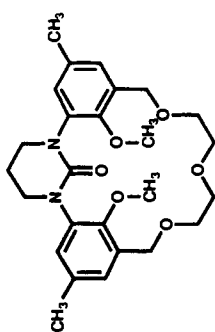
A₃18C5-1



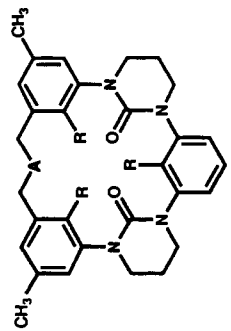
K₂(1,3-B)18C5-1



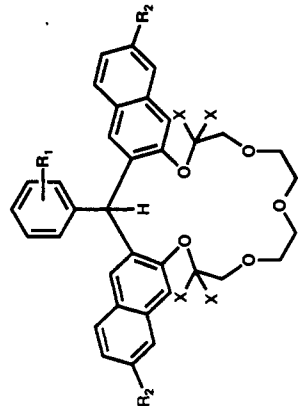
B₂(1,3-B)18C5-1



Spher-A₂18C5-1

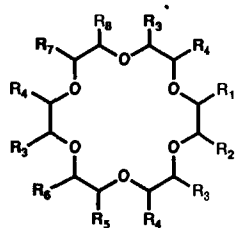


- Spher-A₄18C4-1
- A = C(CO₂C₂H₅)₂
- R = OCH₃
- Spher-A₁18C5-1
- A = O; R = OCH₃
- Spher-A₄18C5-1
- A = S; R = OCH₃

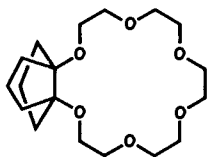


- (Nap)₂18C5-1
- R₁ = 2,6-(Cl)₂; R₂ = H;
- X = Deuterium
- (Nap)₂18C5-2
- R₁ = 2,6-(Cl)₂; R₂ = t-C₄H₉;
- X = H
- (Nap)₂18C5-3
- R₁ = 3,4,5-(OCH₃)₃;
- R₂ = t-C₄H₉; X = H

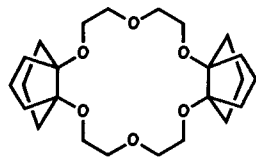
CHART XXVII



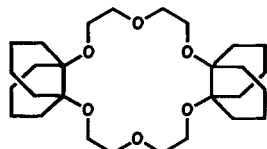
18C6-84
 $R_1, R_4, R_6, R_8 = H$;
 $R_2, R_3, R_5, R_7 = CH_3$
18C6-85
 $R_3, R_4 = H$;
 $R_1, R_2, R_5, R_6, R_7, R_8 = CO_2H$
 (R, R, R, R, R, R)



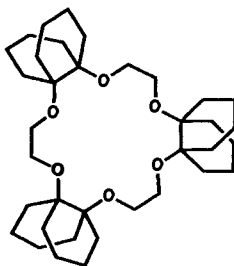
18C6-86



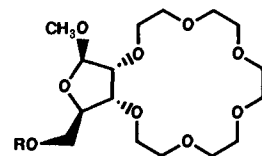
18C6-87



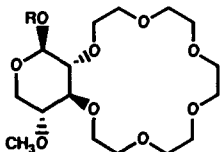
18C6-88



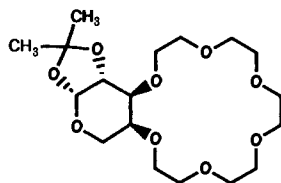
18C6-89



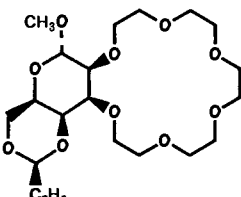
18C6-90
 $R = CH_2C_6H_5$ (d)
18C6-91
 $R = C(C_6H_5)_3$ (l)



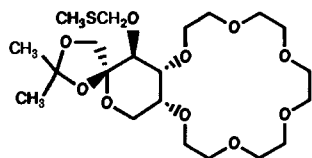
18C6-92
 $R = CH_2C_6H_5$ (l)



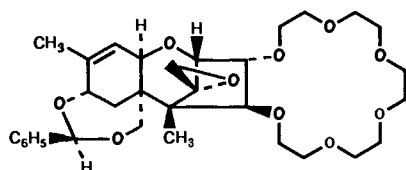
18C6-93 (l)



18C6-94 (d)

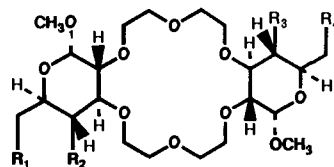


18C6-95 (d)



18C6-96

CHART XXVIII



18C6-97
 $R_1, R_2, R_3, R_4 = OC_4H_9$

18C6-98
 $R_1, R_4 = C(C_6H_5)_3$;
 $R_2, R_3 = CO_2CH_3$

18C6-99
 $R_1, R_4 = OH$;
 $R_2, R_3 = CO_2CH_3$

18C6-100
 $R_1, R_4 = Br$;
 $R_2, R_3 = CO_2C_6H_5$

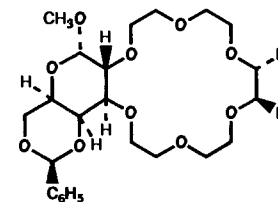
18C6-101
 $R_1, R_4 = H$; $R_2, R_3 = OH$

18C6-102
 $R_1, R_4 = Br$; $R_2, R_3 = OH$

18C6-103
 $R_1, R_4 = OH$;
 $R_2, R_3 = OCH_2C_6H_5$

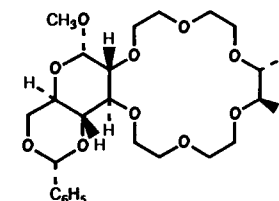
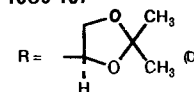
18C6-104
 $R_1, R_3 = OH$;
 $R_2, R_4 = OCH_2C_6H_5$

18C6-105
 $R_1, R_4 = OCH_2C_6H_5$;
 $R_2, R_3 = OH$



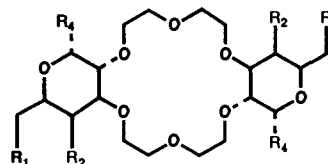
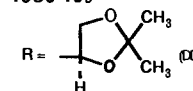
18C6-106
 $R = H$ (D)

18C6-107



18C6-108
 $R = H$ (D)

18C6-109



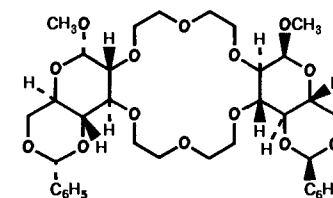
18C6-110
 $R_1, R_2, R_3 = OH$;
 $R_4 = OCH_3$

18C6-111
 $R_1, R_2, R_3 = CO_2CH_3$;
 $R_4 = OCH_3$

18C6-112
 $R_1, R_2 = OH$; $R_3 = OTosyl$;
 $R_4 = OCH_3$

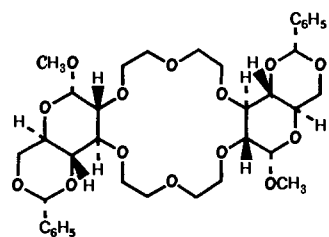
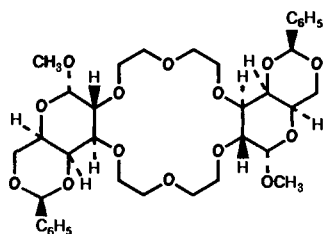
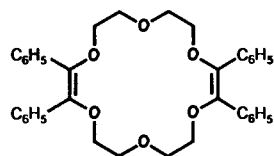
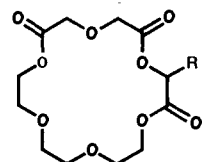
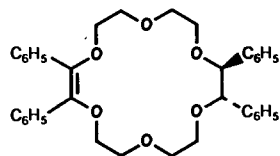
18C6-113
 $R_1, R_3 = OTosyl$;
 $R_2 = OH$; $R_4 = OCH_3$

18C6-114
 $R_1, R_3 = OSO_2CH_3$;
 $R_2 = OH$; $R_4 = OCH_3$



18C6-115
 (DD)

CHART XXIX

18C6-116
(DD)18C6-118
(DD)18C6-diene-1
18C6-diene-2
(cis-syn-cis)
18C6-diene-3
(cis-anti-cis)
18C6-diene-4
(trans-syn-trans)
18C6-diene-5
(trans-anti-trans)K₃18C6-1
R = H
K₃18C6-2
R = CH₂C₆H₅

18C6-ene-1

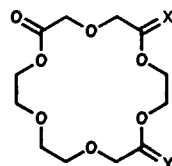
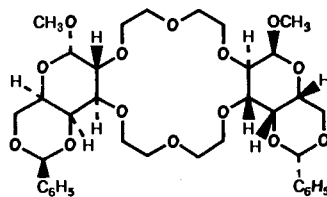
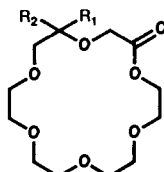
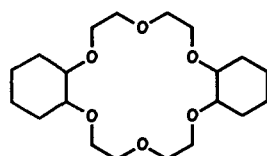
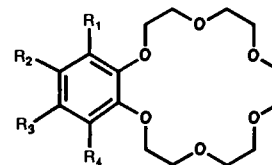
K₂18C6-1
X = O; Y = H₂
K₂18C6-2
X = H₂; Y = O18C6-117
(DD)K18C6-1
R₁, R₂ = H
K18C6-2
R₁ = H; R₂ = CH₃
K18C6-3
R₁ = H; R₂ = C₆H₁₃
K18C6-4
R₁ = H; R₂ = C₆H₅
K18C6-5
R₁, R₂ = CH₃Cy₂18C6-1
(cis-anti-cis)
Cy₂18C6-2
(cis-syn-cis)
Cy₂18C6-3
(mixture of isomers)

CHART XXX



B18C6-1

R₁, R₂, R₃, R₄ = H

B18C6-2

R₁, R₃, R₄ = H; R₂ = NO₂

B18C6-3

R₁, R₃, R₄ = H; R₂ = NH₂

B18C6-4

R₁, R₃, R₄ = H;R₂ = CO₂C₂H₅

B18C6-5

R₁, R₃, R₄ = H; R₂ = CH₃

B18C6-6

R₁, R₃, R₄ = H; R₂ = CH₂OH

B18C6-7

R₁, R₃, R₄ = HR₂ = C(O)CH₃

B18C6-8

R₁, R₃, R₄ = H;R₂ = NHC(O)CH=CH₂

B18C6-9

R₁, R₃, R₄ = H;R₂ = C≡C-[4-(4-CNC₆H₄)C₆H₄]

B18C6-10

R₁, R₃, R₄ = H;R₂ = CO₂CH₂CH₂OCH₃

B18C6-11

R₁, R₃, R₄ = HR₂ = CO₂C₁₂H₂₅

B18C6-12

R₁, R₃, R₄ = H;R₂ = CO₂(CH₂CH₂O)₃C₆H₁₇

B18C6-13

R₁, R₃, R₄ = HR₂ = CO₂(CH₂CH₂O)₃C₁₂H₂₅

B18C6-14

R₁, R₃, R₄ = H;R₂ = CO₂(CH₂CH₂O)₄C₁₂H₂₅

B18C6-15

R₁, R₃, R₄ = H;R₂ = CO₂(CH₂CH₂O)₅,C₁₂H₂₅

B18C6-16

R₁, R₃, R₄ = H;R₂ = CO₂(CH₂CH₂O)₇,C₁₂H₂₅

B18C6-17

R₁, R₃, R₄ = H;R₂ = CO₂(CH₂CH₂O)_nH

(5000MW)

B18C6-18

R₁, R₃, R₄ = H;R₂ = C(O)NHCH(CO₂CH₃)-CH₂C₆H₅

B18C6-19

R₁, R₃, R₄ = H;R₂ = C(O)N N' (CH₃)₂CH₂-CH(OH)C₁₀H₂₁

B18C6-20

R₁, R₃, R₄ = H;R₂ = CH₂CH(CO₂H)NH-CO₂CH₂C₆H₅

B18C6-21

R₁, R₃, R₄ = H;R₂ = NH-[2,4,6-(NO₂)₃C₆H₂]

B18C6-22

R₁, R₄ = H; R₃ = NO₂;R₂ = NH-[2,4,6-(NO₂)₃C₆H₂]

B18C6-23

R₁ = CH₂CO₂H;R₂, R₃, R₄ = H

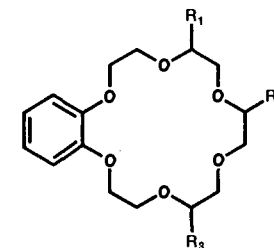
B18C6-24

R₁, R₄ = CH₃; R₂, R₃ = H

B18C6-25

R₁ = CH₂SCH₃; R₂, R₃, R₄ = H

B18C6-26

R₁ = CH₂SCH₂-β-cyclodextrinR₂, R₃, R₄ = H

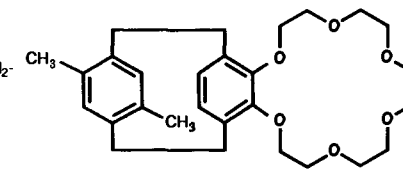
B18C6-27

R₁, R₃ = H; R₂ = CH₃

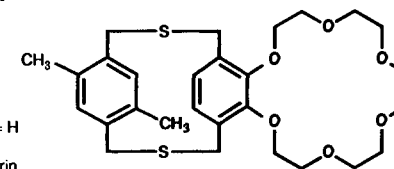
B18C6-28

R₁, R₃ = CH₃; R₂ = H

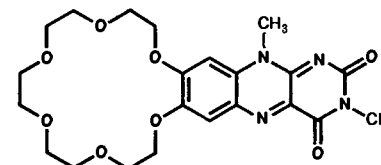
B18C6-29

R₁, R₂, R₃ = CH₃

B18C6-30

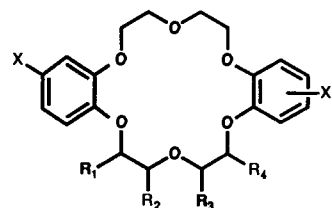


B18C6-31

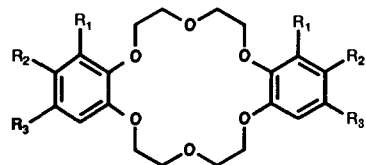


B18C6-32

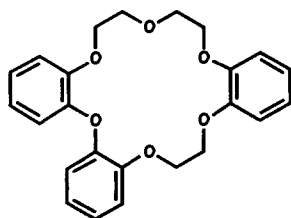
CHART XXXI



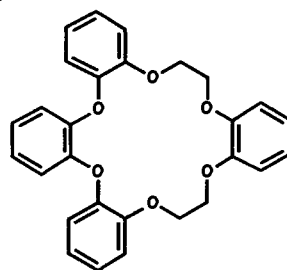
- B₂18C6-1**
R₁, R₂, R₃, R₄, X = H
B₂18C6-2
R₁, R₂, R₃, R₄ = H; X = C₂H₅
B₂18C6-3
R₁, R₂, R₃, R₄ = H; X = C₃H₇
B₂18C6-4
R₁, R₂, R₃, R₄ = H; X = C₄H₉
B₂18C6-5
R₁, R₂, R₃, R₄ = H; X = t-C₄H₉
B₂18C6-6
R₁, R₂, R₃, R₄ = H; X = C₆H₁₁
B₂18C6-7
R₁, R₂, R₃, R₄ = H; X = C₆H₁₃
B₂18C6-8
R₁, R₂, R₃, R₄ = H; X = C₇H₁₅
B₂18C6-9
R₁, R₂, R₃, R₄ = H; X = C₈H₁₇
B₂18C6-10
R₁, R₂, R₃, R₄ = H; X = C(O)CH₃
B₂18C6-11
R₁, R₂, R₃, R₄ = H; X = C(O)C₃H₇
B₂18C6-12
R₁, R₂, R₃, R₄ = H; X = C(O)C₄H₉
B₂18C6-13
R₁, R₂, R₃, R₄ = H; X = C(O)C₅H₁₁
B₂18C6-14
R₁, R₂, R₃, R₄ = H; X = C(O)C₆H₁₃
B₂18C6-15
R₁, R₂, R₃, R₄ = H; X = C(O)C₉H₁₉
B₂18C6-16
R₁, R₂, R₃, R₄ = H; X = C(O)C₁₀H₂₁
B₂18C6-17
R₁, R₄, X = H; R₂, R₃ = CH₃ (dl)
B₂18C6-18
R₂, R₃, X = H; R₁, R₄ = CH₃ (dl)
B₂18C6-19
R₂, R₃, X = H; R₁, R₄ = CH₃ (meso)
B₂18C6-20
R₁, R₂, R₃, R₄ = H; X = NO₂ (trans)
B₂18C6-21
R₁, R₂, R₃, R₄ = H; X = NH₂ (trans)
B₂18C6-22
R₁, R₂, R₃, R₄ = H; X = CH₂CH₂OH



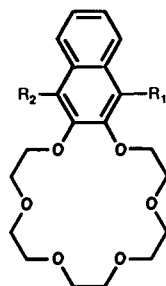
- B₂18C6-23**
R₁, R₃ = t-C₄H₉; R₂ = H
B₂18C6-24
R₁ = H; R₂, R₃ = CH₂P(O)(C₆H₅)₂
B₂18C6-25
R₁, R₂ = H; R₃ = C₁₆H₃₃



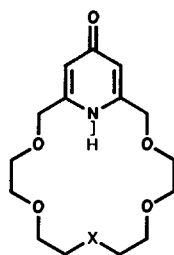
B₃18C6-1



B₄18C6-1

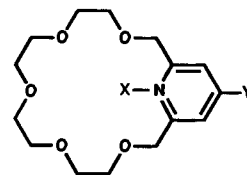


- (2,3-Nap)18C6-1**
R₁, R₂ = H
(2,3-Nap)18C6-2
R₁ = H; R₂ = Br
(2,3-Nap)18C6-3
R₁, R₂ = Br

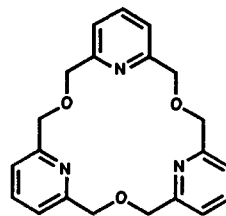


- Pyridono18C6-1**
X = O
PyridonoT18C6-1
X = S

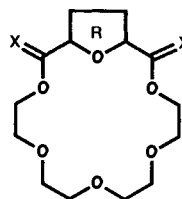
CHART XXXII



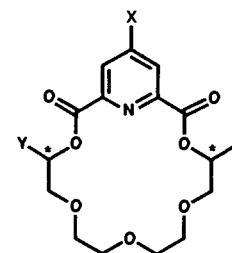
- Py18C6-1**
X = not present; Y = H
Py18C6-2
X = H⁺; Y = H
Py18C6-3
X = O; Y = H
Py18C6-4
X = not present; Y = C₆H₅



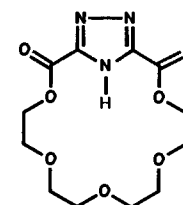
Py₃18C6-1



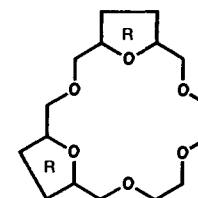
- Fur18C6-1**
R = Furan; X = H₂
K₂Fur18C6-1
R = Furan; X = O
THF18C6-1
R = THF; X = H₂ (cis)
THF18C6-2
R = THF; X = H₂
(cis + trans)
K₂THF18C6-1
R = THF; X = O



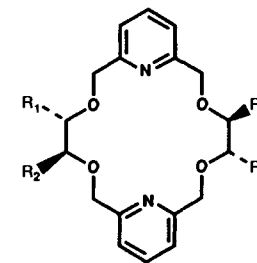
- K₂Py18C6-1**
X, Y = H
K₂Py18C6-2
X = Cl; Y = H
K₂Py18C6-3
X = OH; Y = H
K₂Py18C6-4
X = H; Y = CH₃ (RR)



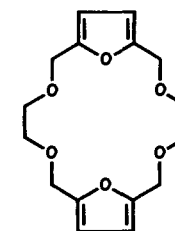
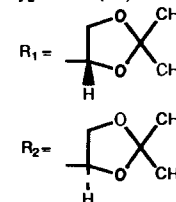
K₂Triazolo18C6-1



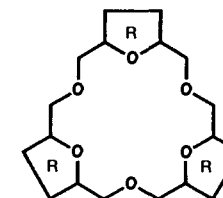
- (Fur)₂18C6-2**
R = Furan
(THF)₂18C6-1
R = THF



- Py₂18C6-1**
R₁, R₂ = H
Py₂18C6-2 (DD)

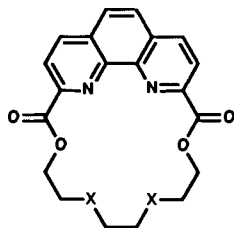


(Fur)₂18C6-1

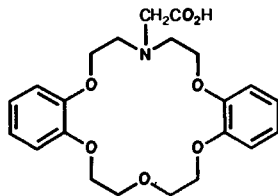


- (Fur)₃18C6-1**
R = Furan
(THF)₃18C6-1
R = THF
(syn-cis-cis-cis +
syn-cis-cis-anti-cis)

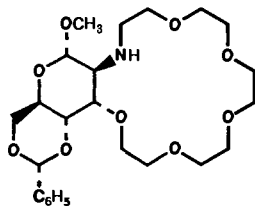
CHART XXXIII



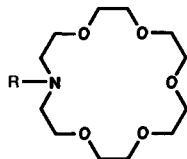
K₂Phen18C6-1
X = O
K₂PhenT₂18C6-1
X = S



B₂A18C6-1

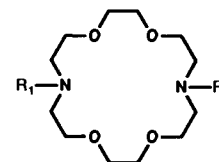


A18C6-41



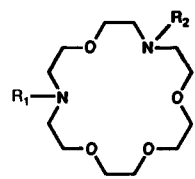
- A18C6-1**
R = H
- A18C6-2**
R = CH₃
- A18C6-3**
R = C₃H₇
- A18C6-4**
R = C₇H₁₅
- A18C6-5**
R = C₈H₁₇
- A18C6-6**
R = C₁₂H₂₅
- A18C6-7**
R = CH₂CO₂H
- A18C6-8**
R = CH₂PO₃H₂
- A18C6-9**
R = CH₂C₆H₅
- A18C6-10**
R = 2-CH₃OC₆H₅
- A18C6-11**
R = CH₂CH(OH)CH₃
- A18C6-12**
R = CH₂CH(OH)CH₂-
Morpholine
- A18C6-13**
R = CH₂CH(OH)CH₂-
Adenosine
- A18C6-14**
R = CH₂CH(OH)C₈H₁₇
- A18C6-15**
R = CH₂CH(C₈H₁₇)OCH₃
- A18C6-16**
R = CH₂CH(C₈H₁₇)O-
CH₂CH₂OCH₃
- A18C6-17**
R = CH₂CH(C₈H₁₇)O-
(CH₂CH₂O)₂CH₃
- A18C6-18**
R = CH₂CH₂OCH₃
- A18C6-19**
R = (CH₂CH₂O)₂CH₃
- A18C6-20**
R = (CH₂CH₂O)₃CH₃
- A18C6-21**
R = (CH₂CH₂O)₄CH₃
- A18C6-22**
R = (CH₂CH₂O)₅CH₃
- A18C6-23**
R = (CH₂CH₂O)₆CH₃
- A18C6-24**
R = CH₂CH₂OC₈H₁₇
- A18C6-25**
R = (CH₂CH₂O)₂C₈H₁₇
- A18C6-26**
R = (CH₂CH₂O)₃C₈H₁₇
- A18C6-27**
R = CH₂CH₂OC₁₂H₂₅
- A18C6-28**
R = (CH₂CH₂O)₂C₁₂H₂₅
- A18C6-29**
R = (CH₂CH₂O)₂C₆H₅
- A18C6-30**
R = CH₂-[2-HO-5-NO₂C₆H₃]
- A18C6-31**
R = gly-OC₂H₅
- A18C6-32**
R = gly-gly-OCH₃
- A18C6-33**
R = gly-val-OCH₃
- A18C6-34**
R = gly-ile-OCH₃
- A18C6-35**
R = CH₂C(O)O-cholesteryl
- A18C6-36**
R = CH₂C(O)O-dihydro-
cholesteryl
- A18C6-37**
R = C(O)O-cholesteryl
- A18C6-38**
R = C(O)CH₂SCH₃
- A18C6-39**
R = C(O)CH₂SCH₂-
β-cyclodextrin
- A18C6-40**
R = CH₂CH=CH₂

CHART XXXIV

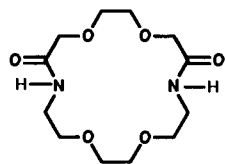


- A₂18C6-1**
R₁, R₂ = H
- A₂18C6-2**
R₁ = H;
R₂ = CH₂CO₂H
- A₂18C6-3**
R₁ = H;
R₂ = CH₂CH₂CO₂H
- A₂18C6-4**
R₁, R₂ = CH₃
- A₂18C6-5**
R₁, R₂ = C₃H₇
- A₂18C6-6**
R₁, R₂ = C₄H₉
- A₂18C6-7**
R₁, R₂ = C₆H₁₃
- A₂18C6-8**
R₁, R₂ = C₈H₁₇
- A₂18C6-9**
R₁, R₂ = C₁₀H₂₁
- A₂18C6-10**
R₁, R₂ = C₁₂H₂₅
- A₂18C6-11**
R₁, R₂ = CH₂CH=CH₂
- A₂18C6-12**
R₁, R₂ = CH₂C=CH
- A₂18C6-13**
R₁, R₂ = CH₂CH₂OH
- A₂18C6-14**
R₁, R₂ = CH₂CH₂OCH₃
- A₂18C6-15**
R₁, R₂ = CH₂CH(OH)CH₃
- A₂18C6-16**
R₁, R₂ = C(O)C₈H₁₇
- A₂18C6-17**
R₁, R₂ = CH₂CO₂H
- A₂18C6-18**
R₁, R₂ = CO₂CH₃
- A₂18C6-19**
R₁, R₂ = CH₂CO₂CH₃
- A₂18C6-20**
R₁, R₂ = CH₂CO₂C₂H₅
- A₂18C6-21**
R₁, R₂ = CH₂CN
- A₂18C6-22**
R₁, R₂ = CH₂CH₂CO₂H
- A₂18C6-23**
R₁, R₂ = (CH₂)₃NH₂
- A₂18C6-24**
R₁, R₂ = CH₂C(O)NH₂
- A₂18C6-25**
R₁, R₂ = (CH₂)₃NPhthalimide
- A₂18C6-26**
R₁, R₂ = (CH₂CH₂O)₂H
- A₂18C6-27**
R₁, R₂ = CH₂C₆H₅
- A₂18C6-28**
R₁, R₂ = CH₂-[2-HOC₆H₄]
- A₂18C6-29**
R₁, R₂ = CH₂-[2-CH₃OC₆H₄]
- A₂18C6-30**
R₁, R₂ = CH₂-[4-CH₃OC₆H₄]
- A₂18C6-31**
R₁, R₂ = CH₂-[4-CNC₆H₄]
- A₂18C6-32**
R₁, R₂ = CH₂-[2-CNC₆H₄]
- A₂18C6-33**
R₁, R₂ = CH₂-[4-CNC₆H₄]
- A₂18C6-34**
R₁, R₂ = CH₂-[2-NO₂C₆H₄]
- A₂18C6-35**
R₁, R₂ = CH₂-[4-NO₂C₆H₄]
- A₂18C6-36**
R₁, R₂ = CH₂-[2-HO-5-NO₂C₆H₃]
- A₂18C6-37**
R₁, R₂ = CH₂-[2-HO-5-(N=N-
4-NO₂C₆H₄)C₆H₃]
- A₂18C6-38**
R₁, R₂ = CH₂-[2-HO-5-(N=N-
2,4-(NO₂)₂C₆H₃)C₆H₃]
- A₂18C6-39**
R₁, R₂ = CH₂-[2-Fur]
- A₂18C6-40**
R₁, R₂ = CH₂-[2-C₅H₄N]
- A₂18C6-41**
R₁, R₂ = gly-gly-OCH₃
- A₂18C6-42**
R₁, R₂ = (CH₂)₃NPhthalimide
- A₂18C6-43**
R₁, R₂ = gly-leu-OCH₃
- A₂18C6-44**
R₁, R₂ = gly-ile-OCH₃
- A₂18C6-45**
R₁, R₂ = gly-val-OCH₃
- A₂18C6-46**
R₁, R₂ = CH₂PO₃H₂
- A₂18C6-47**
R₁ = CH₃; R₂ = C₁₂H₂₅
- A₂18C6-48**
R₁ = C₁₈H₃₇;
R₂ = CH₂CH₂N⁺(CH₃)₃
- A₂18C6-49**
R₁, R₂ = C(O)CH₂O-[2-SHC₆H₄]
- A₂18C6-50**
R₁, R₂ = CH(CH₃)CO₂H
- A₂18C6-51**
R₁ = H; R₂ = CH₂-β-cyclodextrin

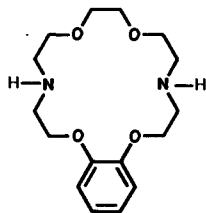
CHART XXXV



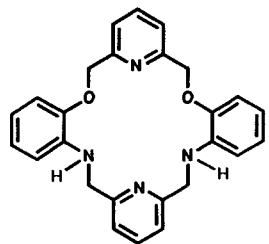
A₂18C6-52
R₁, R₂ = CH₂C₆H₅



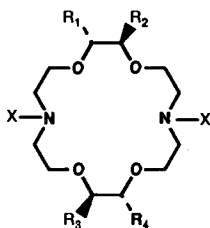
K₂A₂18C6-2



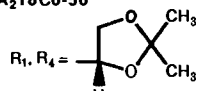
BA₂18C6-1



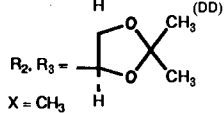
Py₂B₂A₂18C6-1



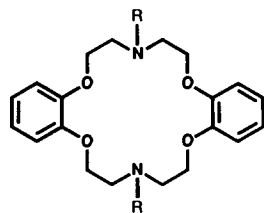
A₂18C6-53
R₁, R₂ = CO₂H; R₃, R₄, X = H
A₂18C6-54
R₁, R₂, R₃, R₄ = CO₂H; X = H
A₂18C6-55
R₁, R₂ = CO₂H; R₃, R₄ = H;
X = CH₂CO₂H
A₂18C6-56



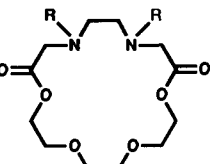
A₂18C6-57
X = H₂
K₂A₂18C6-1
X = O



K₂A₂18C6-3
R = CH₂CO₂H



B₂A₂18C6-1
R = C₄H₉
B₂A₂18C6-2
R = CH₂CH₂OCH₃
B₂A₂18C6-3
R = CH₂CH₂OC₄H₉
B₂A₂18C6-4
R = (CH₂CH₂O)₂C₄H₉



A₃18C6-1
R₁, R₂ = CH₃
A₃18C6-2
R₁ = CH₂C₆H₅
R₂ = C₂H₅

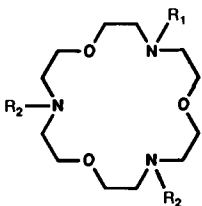
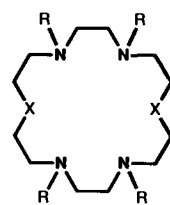
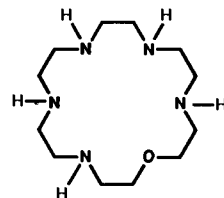


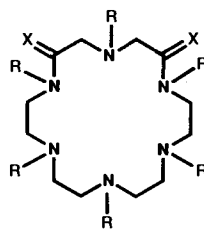
CHART XXXVI



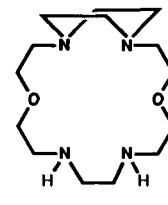
A₄18C6-1
R = H; X = O
A₄18C6-2
R = CH₂CH₂OH;
X = O
A₄18C6-3
R = CH₂CH(CH₃)OH;
X = O
A₄18C6-4
R = CH₃; X = O
A₄T₂18C6-1
R = H; X = S
A₄T₂18C6-2
R = CH₃; X = S



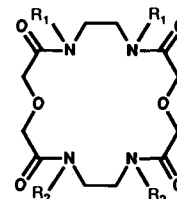
A₅18C6-1



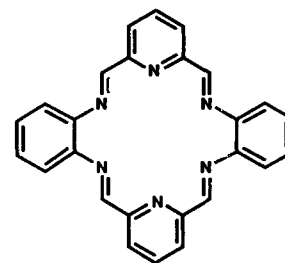
A₆18C6-1
R = H; X = H₂
A₆18C6-2
R = CH₂CO₂H;
X = H₂
K₂A₆18C6-1
R = H; X = O



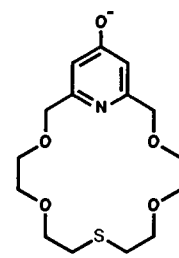
A₄18C6-5



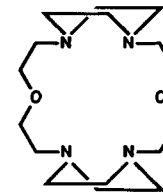
K₄A₄18C6-1
R₁ = H; R₂ = CH₂C₆H₅
K₄A₄18C6-2
R₁, R₂ = CH₂C₆H₅



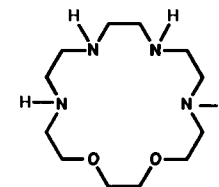
Py₂B₂A₄18C6-tetraene-1



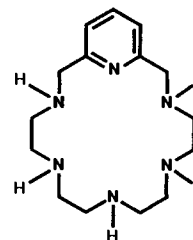
PyridonoT18C6-2



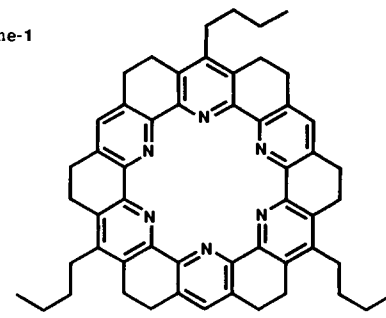
A₄18C6-6



A₄18C6-7

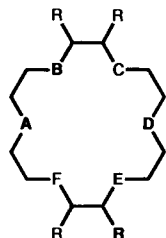


PyA₃18C6-1



Torand-A₆18C6-1

CHART XXXVII

**T18C6-1**

A = S; B, C, D, E, F = O; R = H

T₂18C6-1

A, B = S; C, D, E, F = O; R = H

T₂18C6-2

A, C = S; B, D, E, F = O; R = H

T₂18C6-3

A, D = S; B, C, E, F = O; R = H

T₂18C6-4A, D = S; B, C, E, F = O; R = CO₂H**A₂T₂18C6-1**

A, D = NH; B, C = O; E, F = S; R = H

T₃18C6-1

A, B, C = S; D, E, F = O; R = H

T₃18C6-2

A, C, E = S; B, D, F = O; R = H

A₂T₄18C6-1

A, D = NH; B, C, E, F = S; R = H

(TO)₂18C6-1

A, D = SO; B, C, E, F = O; R = H (α)

(TO)₂18C6-2

A, D = SO; B, C, E, F = O; R = H (β)

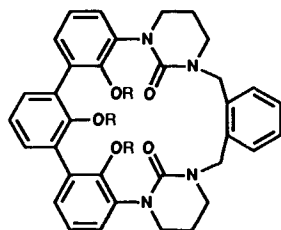
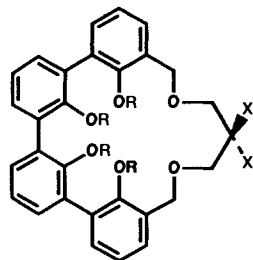
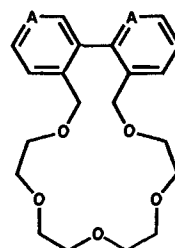
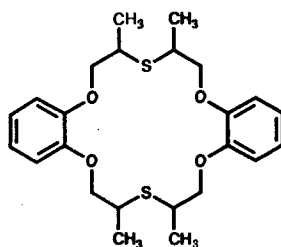
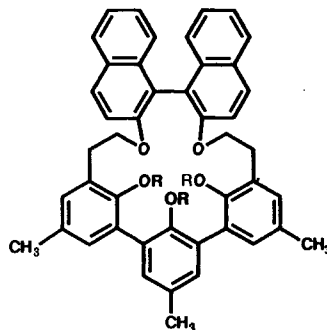
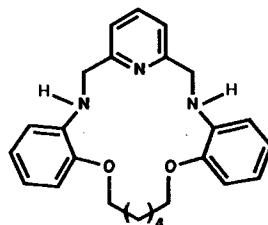
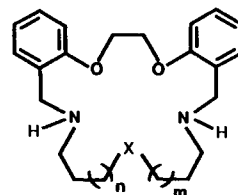
**Spher-BA₄19C4-1**
R = CH₃**Spher-19C2-1**
R = CH₃; X = H
Spher-19C2-2
R = CH₃; X = CH₂OCH₃
Spher-19C2-3
R = C₂H₅; X = H**B₂19C5-1**
A = CH
B₂19C5-2
A = CCH₃
Py₂19C5-1
A = N**B₂T₂18C6-1****Spher-(Nap)₂19C2-1**
R = CH₃**PyB₂A₂19C5-1**

CHART XXXVIII

**B₂A₃19C5-1**

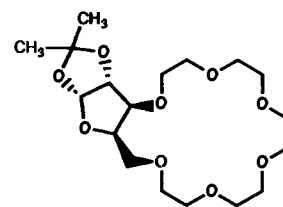
X = NH; n, m = 1

B₂A₃19C5-2X = NCH₃; n, m = 1**B₂A₃19C5-3**

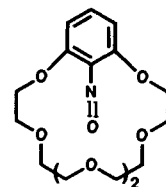
X = NH; n = 0; m = 2

B₂A₂T19C5-1

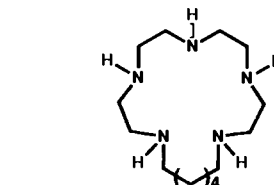
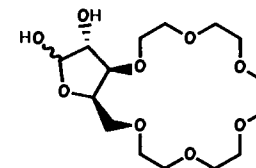
X = S; n, m = 1



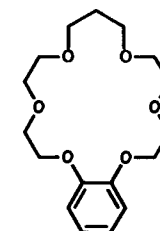
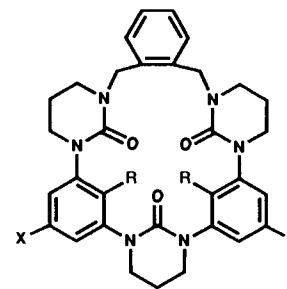
19C6-7 (I)



(1,3-B)19C6-1

**A₅19C5-1**

19C6-6 (d)

**B19C6-1****Spher-BA₅19C6-1**

R, X = H

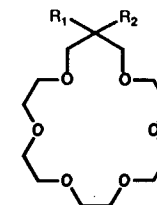
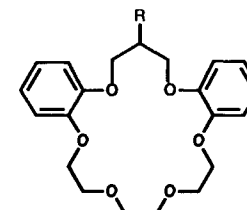
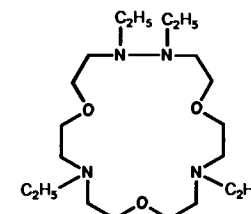
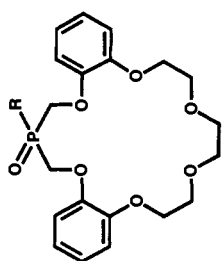
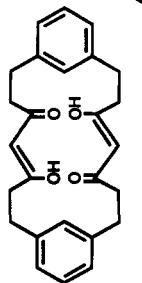
Spher-BA₅19C6-2R = OCH₃; X = CH₃**19C6-1**R₁ = H; R₂ = OH**19C6-2**R₁, R₂ = CH₃**19C6-3**R₁ = CH₃;R₂ = CH₂O(CH₂CH₂O)₂CH₃**19C6-4**R₁ = H; R₂ = CH₂O[2-CO₂H-4-C₁₀H₁₇C₆H₅]**19C6-5**R₁, R₂ = -CH₂OCH₂' (ring)**B₂19C6-1**R = OCH₂CO₂H**B₂19C6-2**R = OCH(C₈H₁₇)CO₂H**A₄19C7-1**

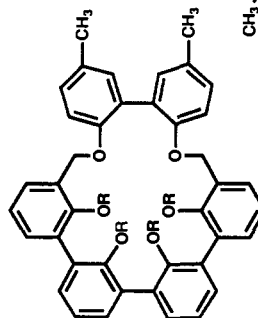
CHART XXXIX



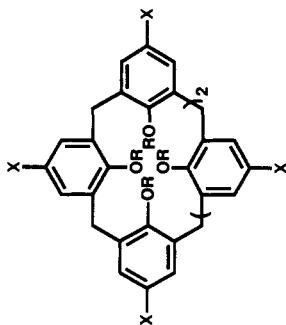
PhosB₂19C7-1
R = CH₃
PhosB₂19C7-2
R = Adamantyl
PhosB₂19C7-3
R = C₆H₅
PhosB₂19C7-4
R = OC₆H₅



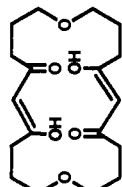
K₂(1,3-B)₂20C-diene-1



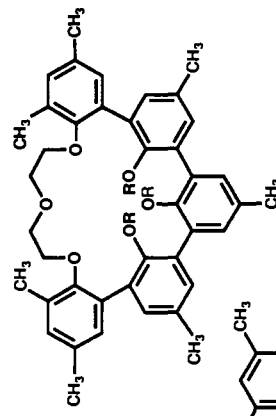
Spher-B₂20C2-1
R = CH₃



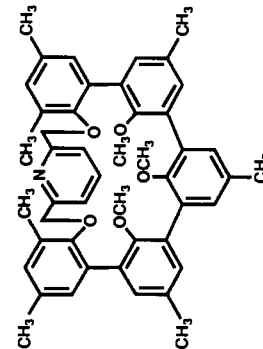
Calix5-20C-1
R = H; X = SO₃Na
Calix5-20C-2
R = CH₂CO₂H
X = SO₃Na



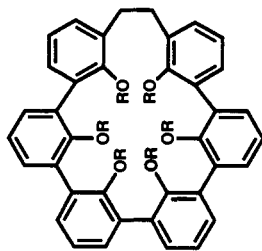
K₂20C2-diene-1



Spher-20C2-1
R = CH₃

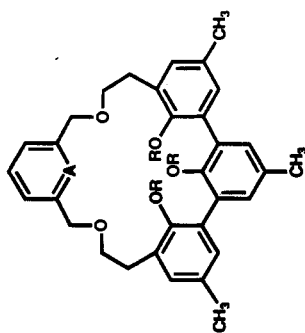


Spher-PyB₂20C3-1

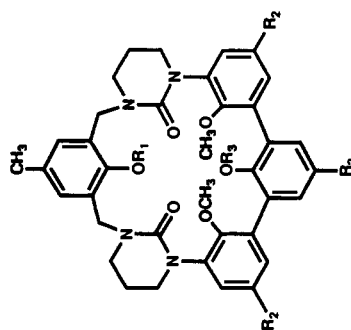


Spher-20C-1
R = CH₃

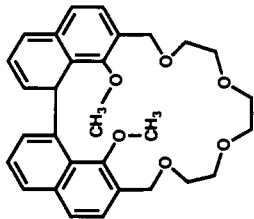
CHART XL



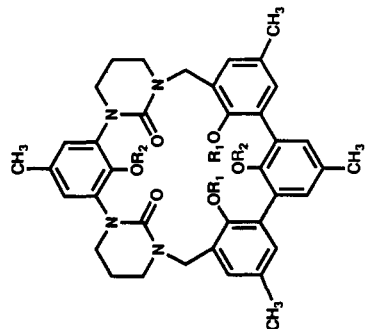
Spher-Py20C3-1
A = N; R = CH₃
Spher-Py20C3-2
A = N-O; R = CH₃



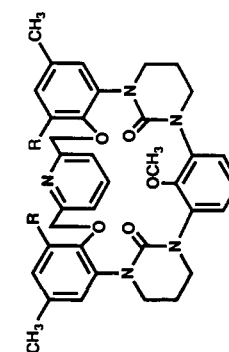
Spher-A₂20C4-3
R₁, R₃ = CH₃; R₂ = H
Spher-A₂20C4-4
R₁ = H; R₂ = CH₃; R₃ = CH₂C₆H₅
Spher-A₂20C4-5
R₁ = CH₂CH=CH₂; R₂ = CH₃; R₃ = CH₂C₆H₅



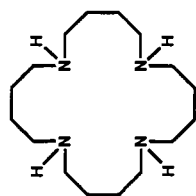
(Nap)₂20C4-1



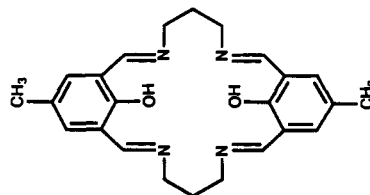
Spher-A₂20C4-1
R₁, R₂ = CH₃
Spher-A₂20C4-2
R₁ = CH₃; R₂ = CH₂C₆H₅



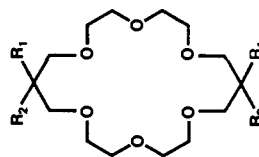
Spher-PyB₂A₂20C7-1
R = CH₃
Spher-PyB₂A₂20C7-2
R = CH₂OH
Spher-PyB₂A₂20C7-3
R = CH₂OCH₃



A₄20C4-1

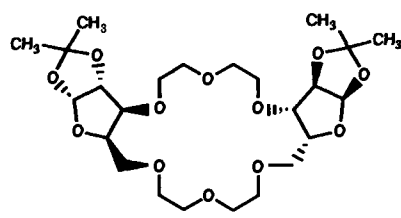


(1,3-B)₂A₂20C4-tetraene-1

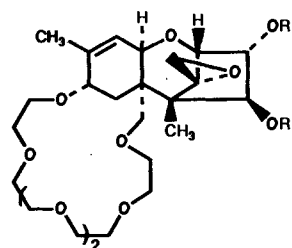
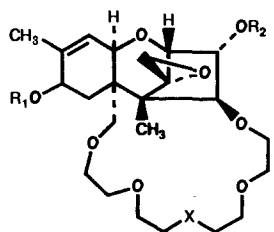
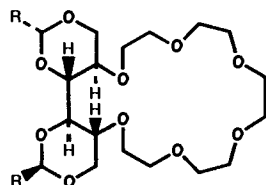
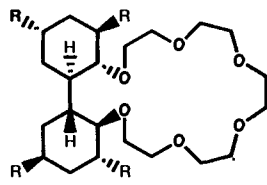
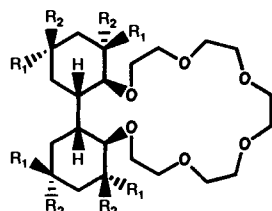
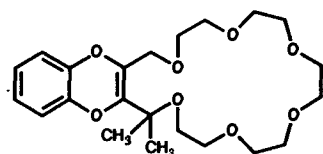


20C6-1
R₁ = CH₃; R₂ = CH₂OH
20C6-2
R₁, R₂ = -CH₂OCH₂- (ring)

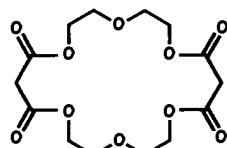
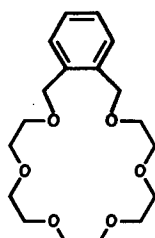
CHART XLI



20C6-3 (I)

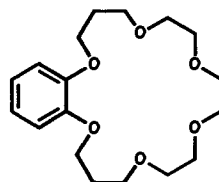
20C6-4
R = Si(CH₃)₂-C₄H₉20C6-5
R₁ = CH₂-(4-CH₃OC₆H₄)
R₂ = Si(CH₃)₂-C₄H₉
X = OCH₂CH₂O
20C6-6
R₁, R₂ = Si(CH₃)₂-C₄H₉
X = O-(1,2-C₆H₄)-O20C6-7
R = H (D)
20C6-8
R = C₆H₅ (D)Cy₂20C6-1
R = H
Cy₂20C6-2
R = CH₃Cy₂20C6-3
R₁, R₂ = H
Cy₂20C6-4
R₁ = CH₃
R₂ = H
Cy₂20C6-5
R₁, R₂ = CH₃

20C6-ene-1

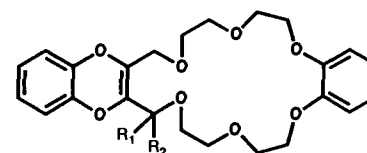
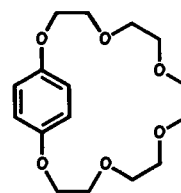
K₄20C6-1

B20C6-1

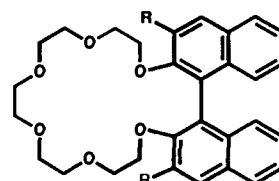
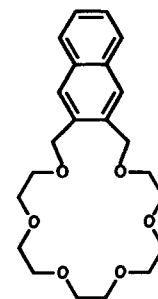
CHART XLII



B20C6-2

B20C6-3
R₁, R₂ = H
B20C6-4
R₁ = H; R₂ = C₆H₅
B20C6-5
R₁, R₂ = CH₃

(1,4-B)20C6-1

(Nap)₂20C6-1
R = H(Nap)₂20C6-2
R = CH₃(Nap)₂20C6-3
R = CHO(Nap)₂20C6-4
R = COCH₃(Nap)₂20C6-5
R = CO₂H(Nap)₂20C6-6
R = CO₂CH₃(Nap)₂20C6-7
R = CH₂NC(O)NCH₃(Nap)₂20C6-8
R = CH₂P(O)(OC₂H₅)₂(Nap)₂20C6-9
R = CH₂S-[1-C₆H₄N](Nap)₂20C6-10
R = CH₂OCH₂-[1-C₆H₄N]B20C6-6
R₁, R₂ = -(CH₂)₅ (ring)B20C6-7
R₁ = CH₃
R₂ = CH₂CH₂OCH₃B20C6-8
R₁ = CH₃
R₂ = CH₂CH₂OCH₂C₆H₅B20C6-9
R₁ = CH₃
R₂ = CH₂CH₂OCH₂
[2-CH₃OC₆H₄]B20C6-10
R₁ = CH₃
R₂ = CH₂CH₂OCH₂
[3-CH₃OC₆H₄]B20C6-11
R₁ = CH₃
R₂ = CH₂CH₂OCH₂
[4-CH₃OC₆H₄]B20C6-12
R₁ = CH₃
R₂ = CH₂CH₂OCH₂
[2,3-(CH₃O)₂C₆H₃]B20C6-13
R₁ = CH₃
R₂ = CH₂CH₂OCH₂
[3,4-(CH₃O)₂C₆H₃]B₂20C6-1
R₁, R₂, R₃ = H;B₂20C6-2
R₁, R₂ = H; R₃ = CH₃;B₂20C6-3
R₁ = CH₃; R₂, R₃ = H;B₂20C6-4
R₁ = CH₂OH; R₂, R₃ = H;B₂20C6-5
R₁ = CH₂OCH₃;B₂20C6-6
R₁ = CH₂Cl; R₂, R₃ = H;B₂20C6-7
R₁ = CH₂CH=CH₂;B₂20C6-8
R₁ = CH=CHCH₃;B₂20C6-9
R₁ = H; R₂ = CH₃;B₂20C6-10
R₁ = H; R₂ = CH₂OCH₃;B₂20C6-11
R₁ = Br; R₂ = H; R₃ = CH₃;B₂20C6-12
R₁, R₃ = CH₃; R₂ = H;B₂20C6-13
R₁ = 2-CH₃O-5-CH₃C₆H₃;R₂ = H; R₃ = CH₃;

(2,3-Nap)20C6-1

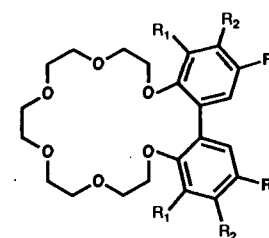
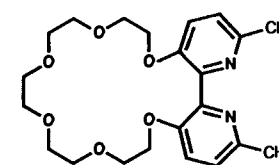
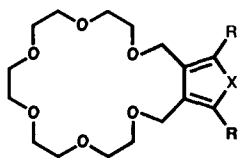
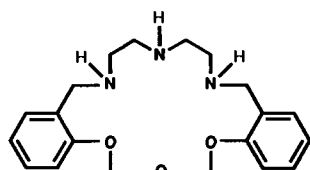
B₂20C6-1
R₁, R₂, R₃ = H;B₂20C6-2
R₁, R₂ = H; R₃ = CH₃;B₂20C6-3
R₁ = CH₃; R₂, R₃ = H;B₂20C6-4
R₁ = CH₂OH; R₂, R₃ = H;B₂20C6-5
R₁ = CH₂OCH₃;B₂20C6-6
R₁ = CH₂Cl; R₂, R₃ = H;B₂20C6-7
R₁ = CH=CHCH₃;B₂20C6-8
R₁ = H; R₂ = CH₃;B₂20C6-9
R₁ = H; R₂ = CH₂OCH₃;B₂20C6-10
R₁ = Br; R₂ = H; R₃ = CH₃;B₂20C6-11
R₁, R₃ = CH₃; R₂ = H;B₂20C6-12
R₁ = 2-CH₃O-5-CH₃C₆H₃;R₂ = H; R₃ = CH₃;Py₂20C6-1

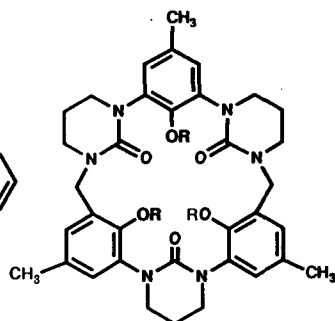
CHART XLIII



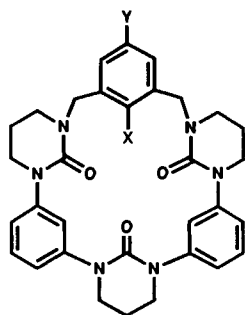
Fur20C6-1
X = O; R = H
Thio20C6-1
X = S; R = CH₃



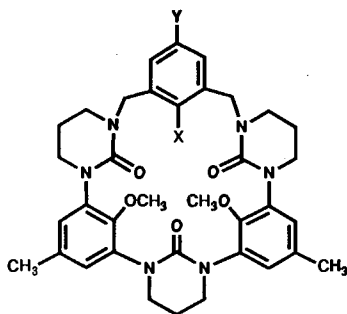
B₂A₃20C6-1



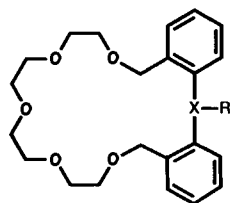
Spher-A₆20C6-1
R = CH₃



Spher-A₆20C6-2
X, Y = H
Spher-A₆20C6-3
X = OCH₃; Y = CH₃

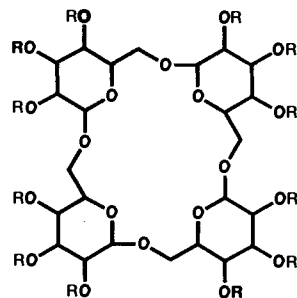


Spher-A₆20C6-4
X, Y = H
Spher-A₆20C6-5
X = H; Y = CH₃
Spher-A₆20C6-6
X = OCH₃; Y = CH₃
Spher-A₆20C6-7
X = Br; Y = H
Spher-A₆20C6-8
X = CO₂CH₃; Y = H
Spher-A₆20C6-9
X = 3,5-(t-C₄H₉)₂-4-CH₃OC₆H₂;
Y = H
Spher-A₆20C6-10
X = 9-Anthracenyl; Y = H
Spher-A₆20C6-11
X = H; Y = t-C₄H₉
Spher-A₆20C6-12
X = Br; Y = t-C₄H₉
Spher-A₆20C6-13
X = 3,5-(t-C₄H₉)₂-4-CH₃OC₆H₂;
Y = t-C₄H₉
Spher-A₆20C6-14
X = 3-HOC₆H₄; Y = H
Spher-A₆20C6-15
X = 3-CH₃OC₆H₄; Y = H

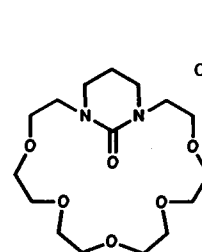


PhosB₂20C6-1
X = P=O; R = OCH₃
PhosB₂20C6-2
X = P=O; R = C₆H₅
PhosB₂20C6-3
X = P=O;
R = 2-CO₂HC₆H₄
PhosB₂20C6-4
X = P=O;
R = 2-CO₂CH₃C₆H₄

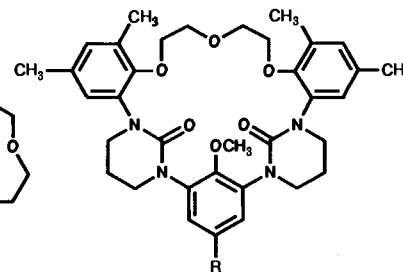
CHART XLIV



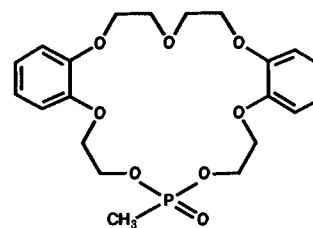
20C8-1
R = C(O)CH₃



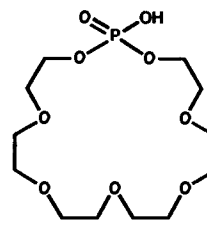
KA₂20C7-1



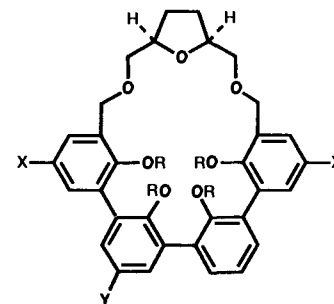
Spher-B₂A₄20C7-1
R = H
Spher-B₂A₄20C7-2
R = CH₃



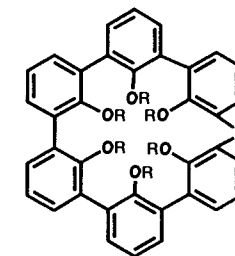
PhosB₂20C8-1



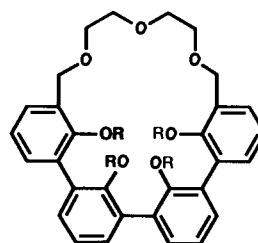
Phos20C8-1



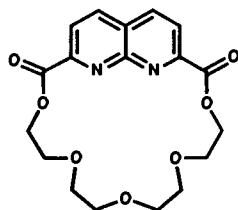
Spher-THF21C3-1
R = CH₃; X, Y = H
Spher-THF21C3-2
R = C₂H₅; X, Y = H
Spher-THF21C3-3
R = CH₂C₆H₅; X, Y = H
Spher-THF21C3-4
R = C₂H₅; X = CH₃;
Y = NH-[2,4,6-(NO₂)₃C₆H₂]
Spher-THF21C3-5
R = C₂H₅; X = CH₃;
Y = NH-[2,4-(NO₂)₂-6-CF₃C₆H₂



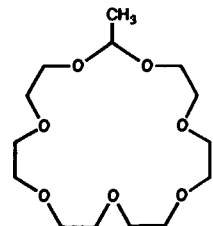
Spher-T21C1-1
R = CH₃; X = CH₂SCH₂
Spher-(T₂O₂)21C3-1
R = CH₃; X = CH₂SO₂CH₂



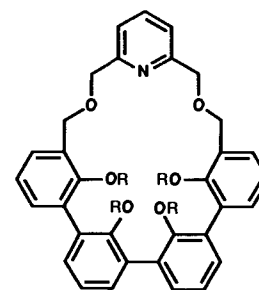
Spher-21C3-1
R = CH₃
Spher-21C3-2
R = C₂H₅



K₂Naphthyr20C7-1

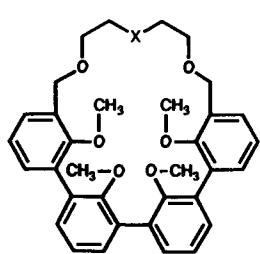


20C7-1

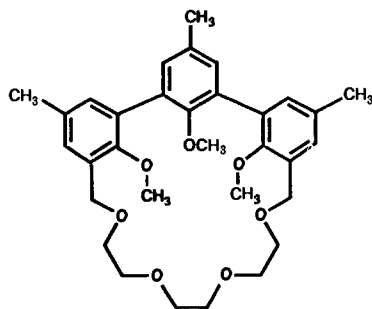


Spher-Py21C3-1
R = CH₃
Spher-Py21C3-2
R = CH₂C₆H₅

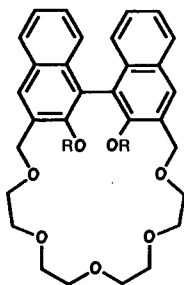
CHART XLV



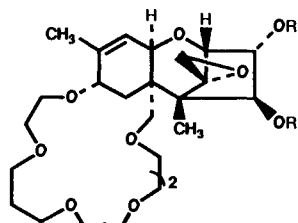
Spher-T21C3-1
X = S
Spher-(TO)21C3-1
X = SO
Spher-(TO₂)21C3-1
X = SO₂



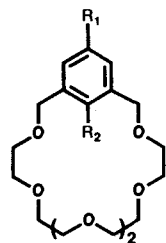
Spher-21C4-1



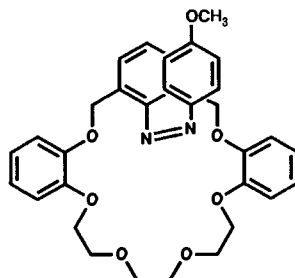
(Nap)₂21C5-1
R = H
(Nap)₂21C5-2
R = CH₃



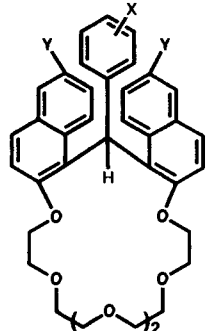
21C6-1
R = Si(CH₃)₂-C₄H₉



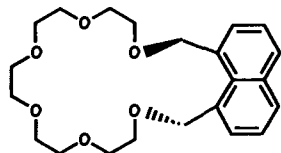
(1,3-B)21C6-1
R₁, R₂ = H
(1,3-B)21C6-2
R₁ = H; R₂ = CO₂H
(1,3-B)21C6-3
R₁ = H; R₂ = OH
(1,3-B)21C6-4
R₁ = NO₂; R₂ = OH
(1,3-B)21C6-5
R₁ = N₂-[2,4-(NO₂)₂C₆H₃];
R₂ = OH
(1,3-B)21C6-6
R₁ = H; R₂ = CO₂CH₃
(1,3-B)21C6-7
R₁ = CH₃; R₂ = OCH₃



(1,3-B)B₂21C6-1
(cis)



(Nap)₂21C6-1
X = 2,6-Cl;
Y = t-C₄H₉
(Nap)₂21C6-2
X = 3,4,5-(OCH₃)₃;
Y = t-C₄H₉



(1,8-Nap)21C6-1

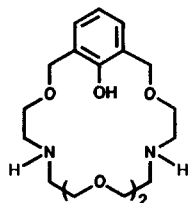
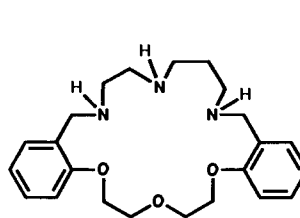
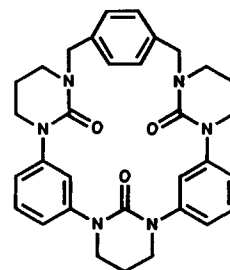
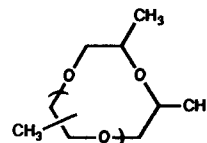
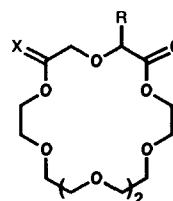
(1,3-B)A₂21C6-1

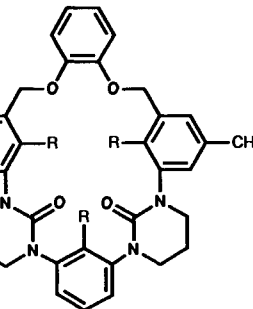
CHART XLVI

B₂A₃21C6-1Spher-(1,4-B)A₆21C6-1

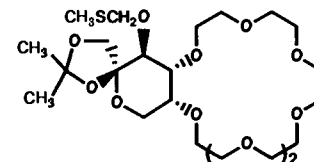
21C7-7



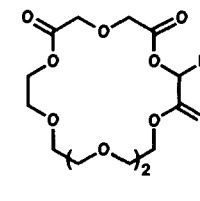
K₂21C7-1
X = H₂;
R = C₆H₁₃



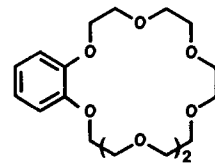
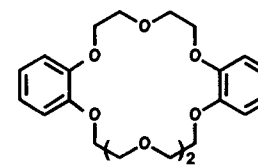
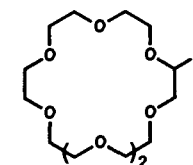
Spher-BA₄21C6-1
R = OCH₃



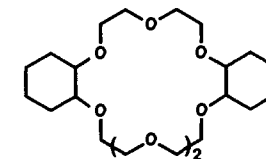
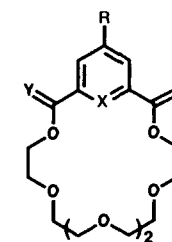
21C7-8



K₃21C7-1
R = H
K₅21C7-2
R = CH₂C₆H₅

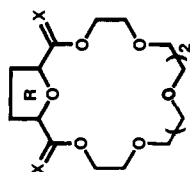
B₂21C7-1B₂21C7-1

21C7-1
R = H
21C7-2
R = CH₂OH
21C7-3
R = CH₂OCH₂C₆H₅
21C7-4
R = CH₂OCH₂CH-CH₂
O
21C7-5
R = CH₂OCH₂CH(OH)-
CH₂Morpholine
21C7-6
R = CH₂OCH₂CH(OH)-
CH₂Adenosine

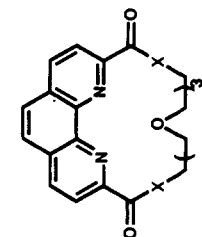
Cy₂21C7-1

Py21C7-1
X = N; Y = H₂; R = H
Py21C7-2
X = NH₂; Y = H₂; R = H
Py21C7-3
X = N; Y = H₂; R = C₆H₅
K₂Py21C7-1
X = N; Y = O; R = H

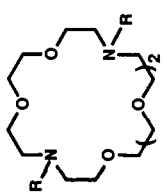
CHART XLVII



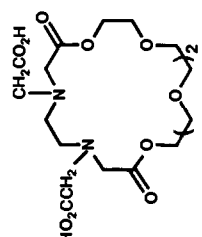
Fur21C7-1
R = Furan; X = H₂
K₂Fur21C7-1
R = Furan; X = O
K₂THF21C7-1
R = THF; X = O



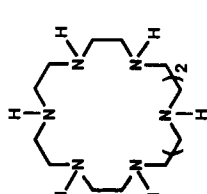
K₂Phen21C7-1
X = O
K₂PhenT₂21C7-1
X = S



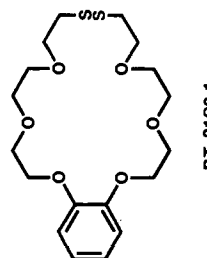
A₂21C7-1
R = H
A₂21C7-2
R = C₁₀H₂₁



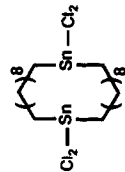
K₂A₂21C7-1



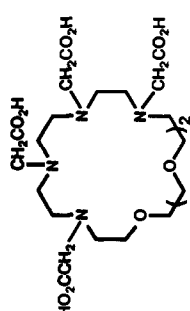
A₇21C7-1



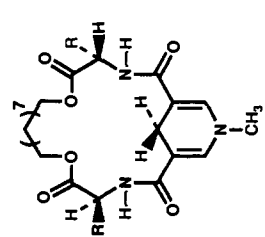
BT₂21C8-1



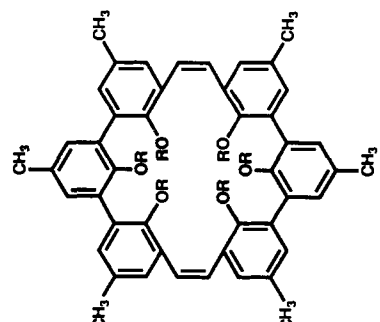
Sn₂22C2-1



A₄21C7-1

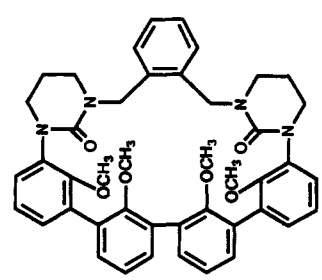


K₄(H₂Py)A₂22C4-1
R = i-C₃H₇

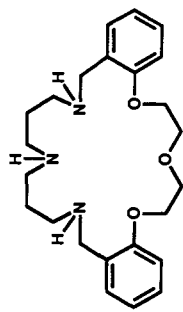


Spher-22-diene-1
R = CH₃
(mixture of isomers)

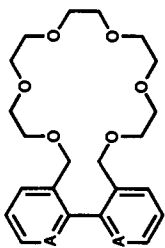
CHART XLVIII



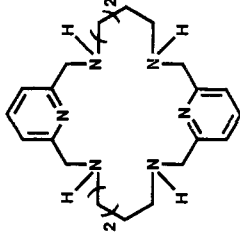
Spher-BA₄22C4-1



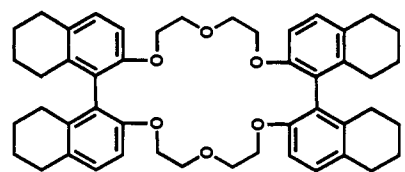
B₂A₃22C6-1



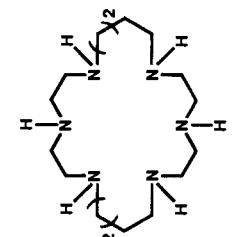
B₂22C6-1
A = CH
B₂22C6-2
A = CCH₃
Py₂22C6-1
A = N
Py₂22C6-2
A = N(PiC₆)
Py₂22C6-3
A = N(Pi₂X₄)



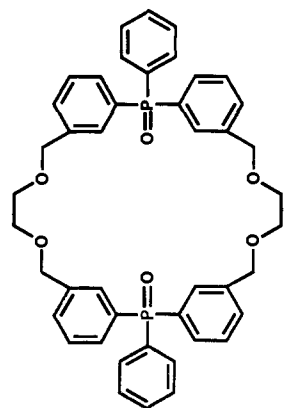
Py₂A₄22C6-1



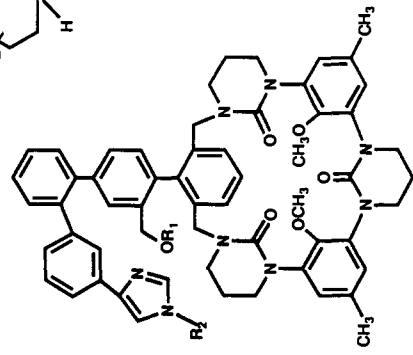
(H₄Nap)₄22C6-1 (RR)



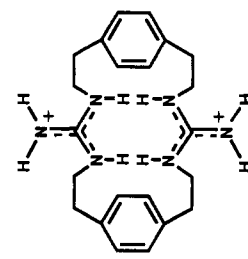
A₆22C6-1



(Phos)₂B₄22C6-1
(Syn)

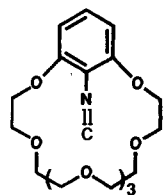


Spher-(1,5-B)A₆22C6-1
R₁, R₂ = H
Spher-(1,5-B)A₆22C6-2
R₁ = CH₂OCH₃; R₂ = C(C₂H₅)₂
Spher-(1,5-B)A₆22C6-3
R₁ = CH₂OCH₃; R₂ = H

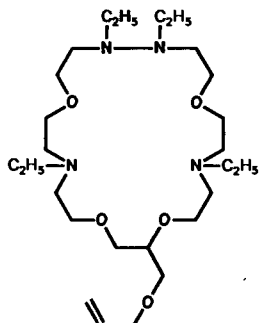
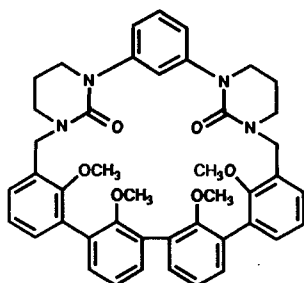
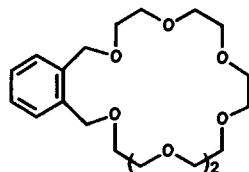
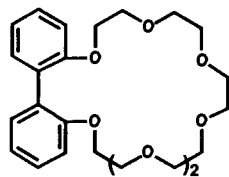
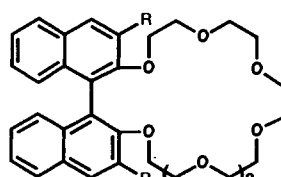
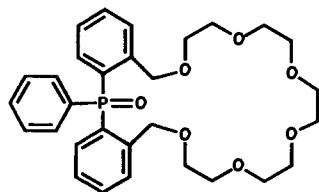
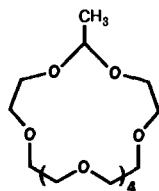


(Guan)₂(1,4-B)₂22C4-1

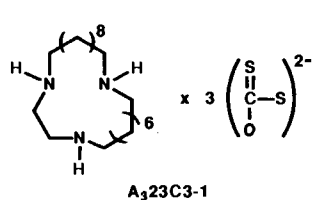
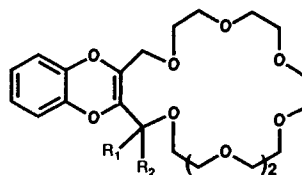
CHART XLIX



(1,3-B)22C7-1

A₄22C8-1Spher-A₄23C4-1B₂23C7-1B₂23C7-1(Nap)₂23C7-1
R = CH₂P(O)(OC₂H₅)₂PhosB₂23C7-1

23C8-1

A₃23C3-1

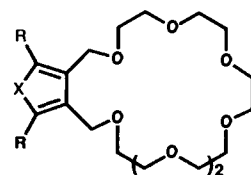
23C7-ene-1

R₁, R₂ = CH₃

23C7-ene-2

R₁ = CH₃;R₂ = CH₂CH₂OCH₂C₆H₅

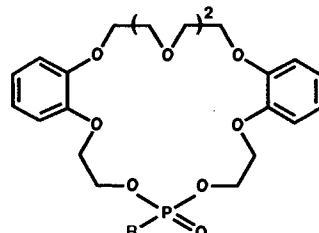
23C7-ene-3

R₁ = CH₃;R₂ = (CH₂CH₂O)₃CH₂C₆H₅

Fur23C7-1

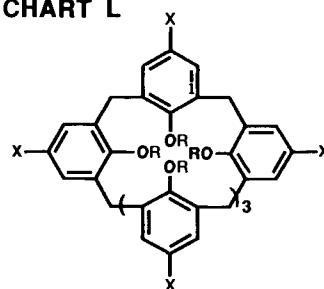
X = O; R = H

Thio23C7-1

X = S; R = CH₃PhosB₂23C9-1

R = Adamantyl

CHART L



Callx6-24C-1

R = H; X = SO₃Na

Callx6-24C-2

R = H; X = t-C₄H₉

Callx6-24C-3

R = CH₃; X = SO₃Na

Callx6-24C-4

R = CH₃;X = CH₂N⁺(CH₃)₃Cl⁻

Callx6-24C-5

R = CH₃;X = CH₂PO₃H₂

Callx6-24C-6

R = CH₂CO₂H; X = SO₃Na

Callx6-24C-7

R = CH₂CO₂C₂H₅;X = t-C₄H₉

Callx6-24C-8

R = C₆H₁₃; X = SO₃Na

Callx6-24C-9

R = C₁₂H₂₅; X = SO₃Na

Callx6-24C-10

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-11

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-12

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-13

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-14

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-15

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-16

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-17

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

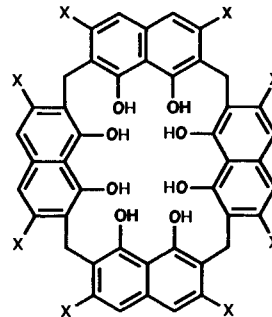
Callx6-24C-18

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

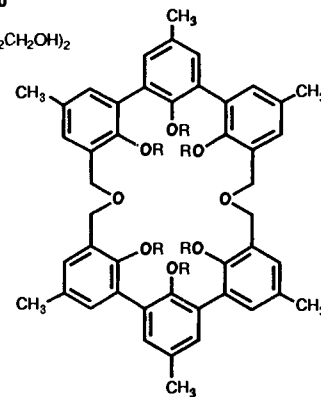
Callx6-24C-19

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Callx6-24C-20

R = CH₃;X = SO₂N(CH₂CH₂OH)₂

Chrom-24C-1

X = SO₃Na

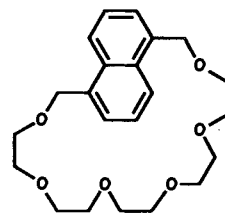
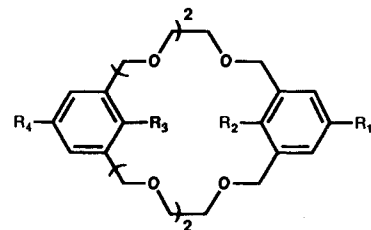
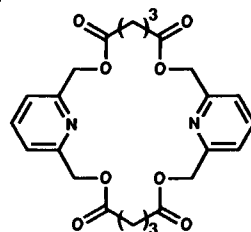
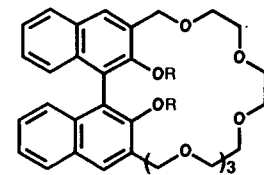
Spher-24C-1

X = OCH₃; Y = H

Spher-24C-2

X = OCH₃; Y = CH₃

Spher-24C-3

X = CN; Y = CH₃(1,5-Nap)₂24C6-1(1,3-B)₂24C6-1R₁ = H; R₂ = CO₂H; R₃ = OHR₄ = N=N-[2,4-(NO₂)₂C₆H₃](1,3-B)₂24C6-2R₁, R₄ = CH₃; R₂, R₃ = OCH₃(1,3-B)₂24C6-3R₁, R₄ = H; R₂, R₃ = CO₂HK₄Py₂24C6-1(Nap)₂24C6-1

R = H

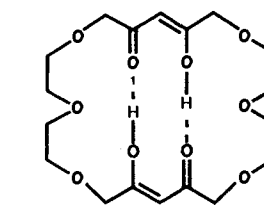
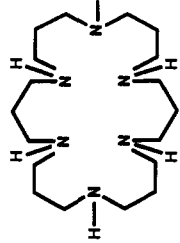
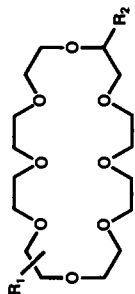
(Nap)₂24C6-2R = CH₃K₂24C6-diene-1

CHART LI



A₂24C8-1



24C8-1

R₁ = H; R₂ = CH₂OH;

24C8-2

R₁ = H; R₂ = CH₂OCH₂C₆H₅

24C8-3

R₁ = H;

R₂ = CH₂OCH₂CH₂-CH₂-O

24C8-4

R₁ = H; R₂ = CH₂OCH₂CH(OH)-

CH₂Propylene

24C8-5

R₁ = H; R₂ = CH₂OCH₂CH(OH)-

CH₂Adenosine

24C8-6

R₁ = H; R₂ = CH₂O-*P*(CO₂H)-

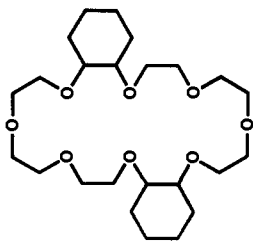
4-C₆H₄(C₆H₅)

24C8-7

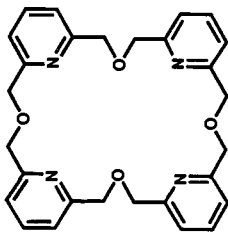
R₁, R₂ = CH(OCC₂H₅)₂

(mixture of isomers)

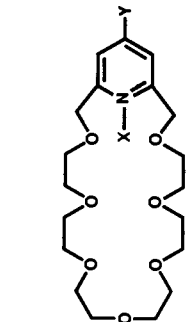
CHART LII



Cy₂24C8-1



Py₂24C8-1



Py24C8-1

X = not present;

Y = H

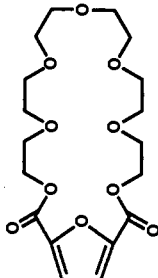
Py24C8-2

X = H'; Y = H

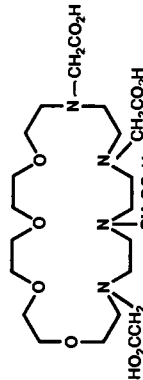
Py24C8-3

X = not present;

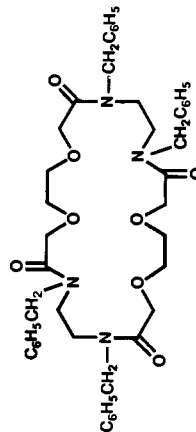
Y = C₆H₅



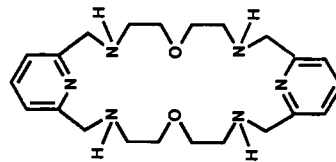
K₂Fur24C8-1



A₄24C8-1



K₄A₄24C8-1



A₆24C8-1

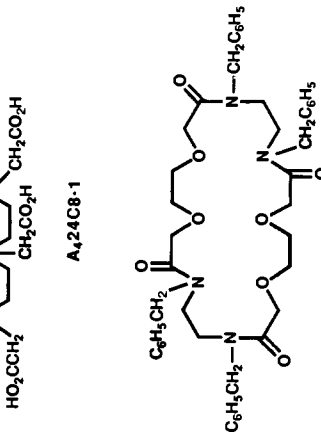
X = O; Y = H₂

A₈24C8-1

X = NH; Y = H₂

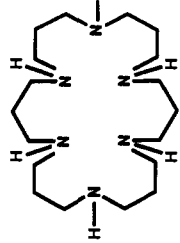
K₄A₆24C8-1

X = NH; Y = O

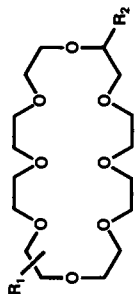


Py₂A₄24C8-1

CHART LI



A₂24C8-1



24C8-1

R₁ = H; R₂ = CH₂OH;

24C8-2

R₁ = H; R₂ = CH₂OCH₂C₆H₅

24C8-3

R₁ = H;

R₂ = CH₂OCH₂CH₂-CH₂-O

24C8-4

R₁ = H; R₂ = CH₂OCH₂CH(OH)-

CH₂Propylene

24C8-5

R₁ = H; R₂ = CH₂OCH₂CH(OH)-

CH₂Adenosine

24C8-6

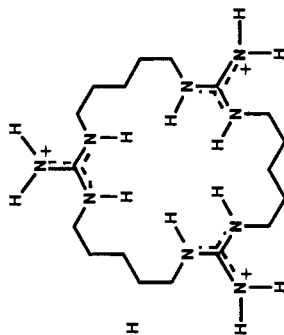
R₁ = H; R₂ = CH₂O-*P*(CO₂H)-

4-C₆H₄(C₆H₅)

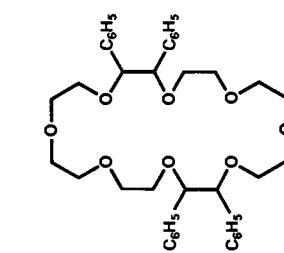
24C8-7

R₁, R₂ = CH(OCC₂H₅)₂

(mixture of isomers)



(Guan)₃24C6-1

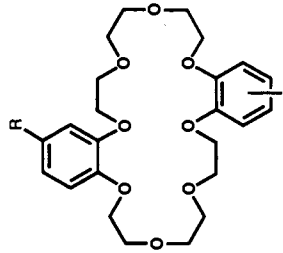


24C8-8

(cis-syn-ds)

24C8-9

(cis-anti-cis)

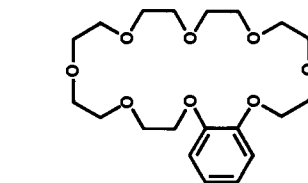


B₂24C8-1

R = H

B₂24C8-2

R = C₆H₅

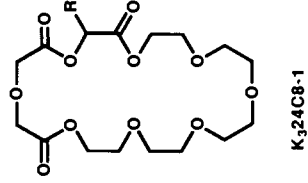


B₂24C8-1

R = H

B₂24C8-2

R = C₆H₅

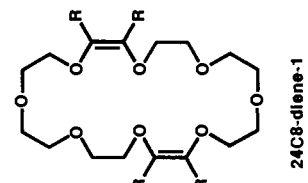


K₃24C8-1

R = H

K₅24C8-2

R = CH₂C₆H₅



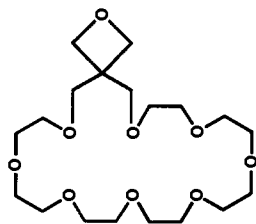
24C8-diene-1

R = C₆H₅

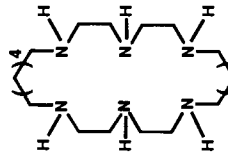
24C8-diene-2

R = 2-CH₃OC₆H₄

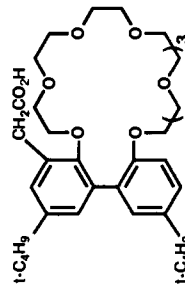
CHART LIII



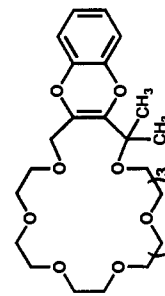
25C8-1



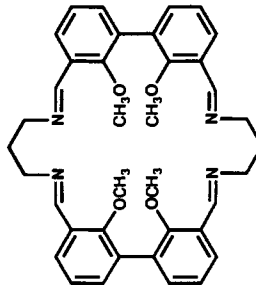
A₆26C6-1



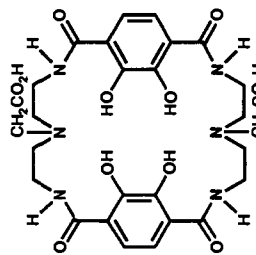
B₂26C8-1



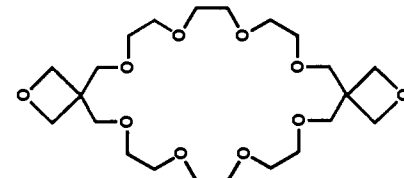
26C8-ene-1



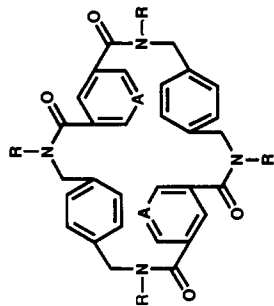
(1,3-B)₄A₂26C4-tetraene-1



K₄(1,4-B)₂A₆26C6-1



26C8-1

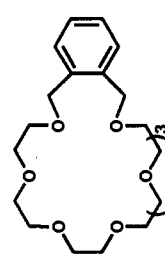


K₄Py₂(1,4-B)₂A₄26C4-1

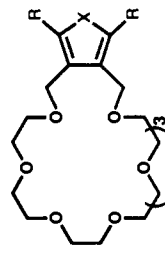
A = N; R = (CH₂)₁₀CO₂H

K₄Py₂(1,4-B)₂A₄26C4-2

A = N⁺CH₃; R = (CH₂)₁₀CO₂H



B₂26C8-1

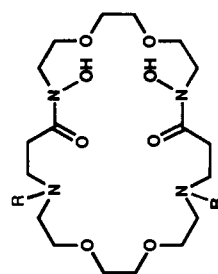


Fur₂26C8-1

X = O; R = H

Thio26C8-1

X = S; R = CH₃



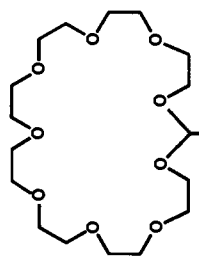
K₂A₄26C8-1

R = H

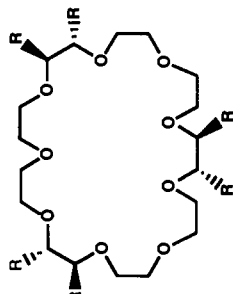
K₂A₄26C8-2

R = CH₂CO₂H

CHART LIV

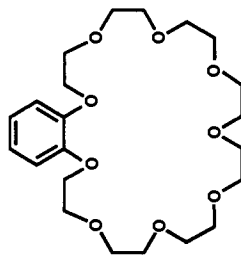


26C9-1

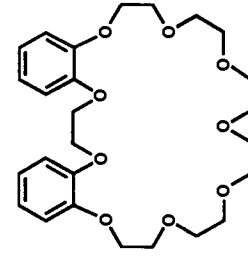


27C9-3

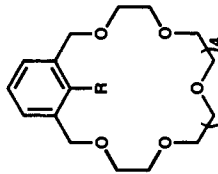
R = CO₂⁻NH(CH₂CH₂OH)₃



B₂27C9-1



B₂27C9-1

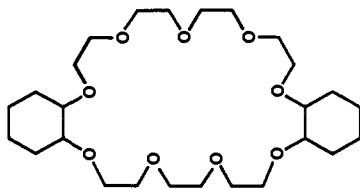


(1,3-B)27C8-1

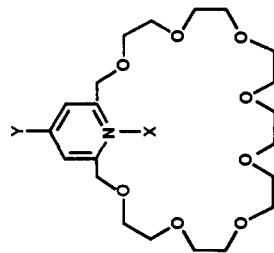
R = H

(1,3-B)27C8-2

R = CO₂H



Cy₂27C9-1



Py₂27C9-1

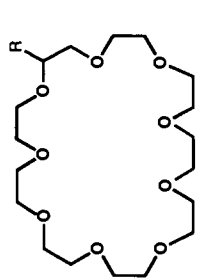
X = not present; Y = H

Py₂27C9-2

X = H; Y = H

Py₂27C9-3

X = not present; Y = C₆H₅

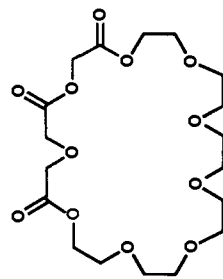


27C9-1

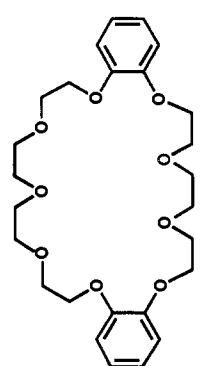
R = CH₂OCH(CO₂H); C₆H₅

27C9-2

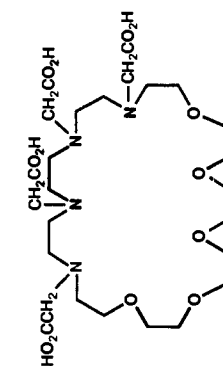
R = CH₂O[2-CO₂H-4-C₆H₄C₆H₅]



K₃27C9-1



B₂27C9-2



A₄27C9-1

CHART LV

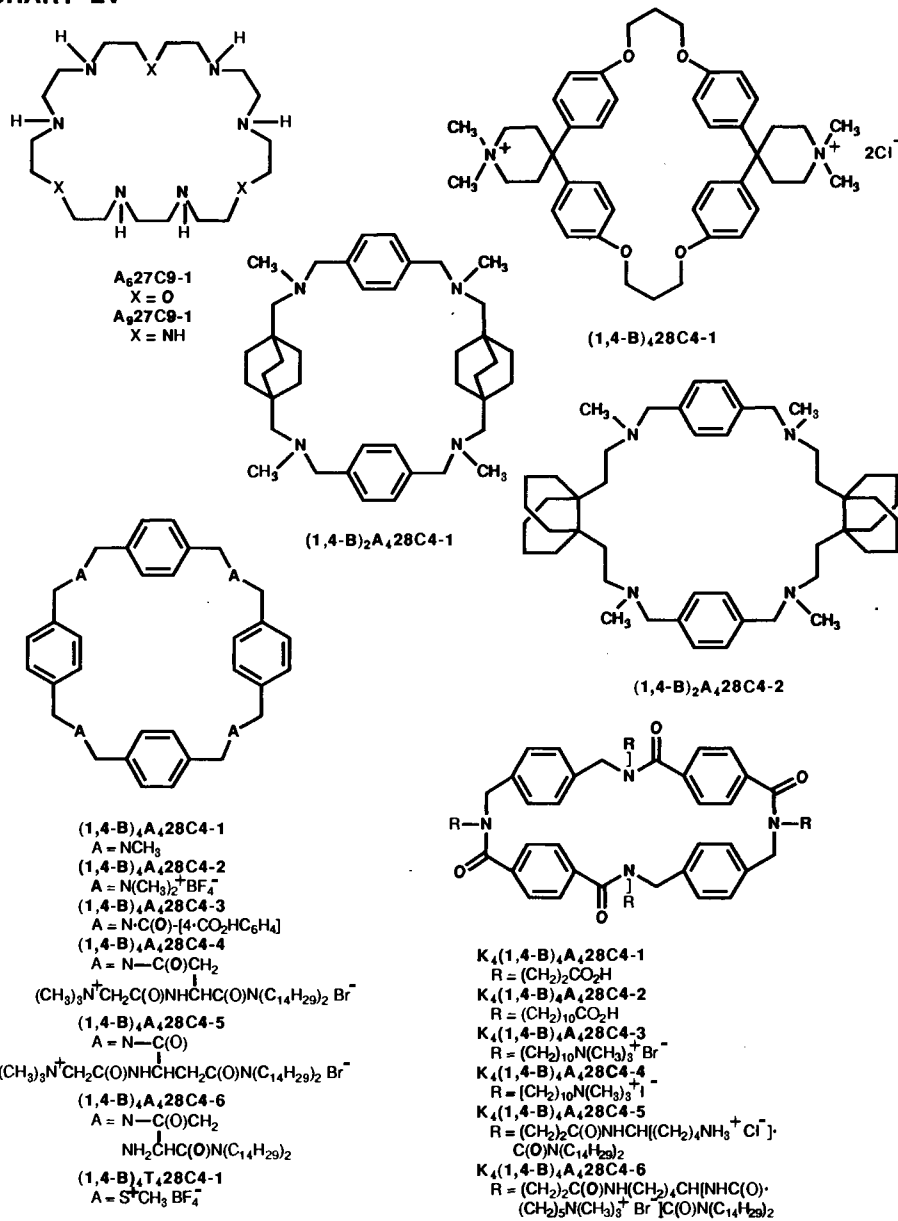


CHART LVI

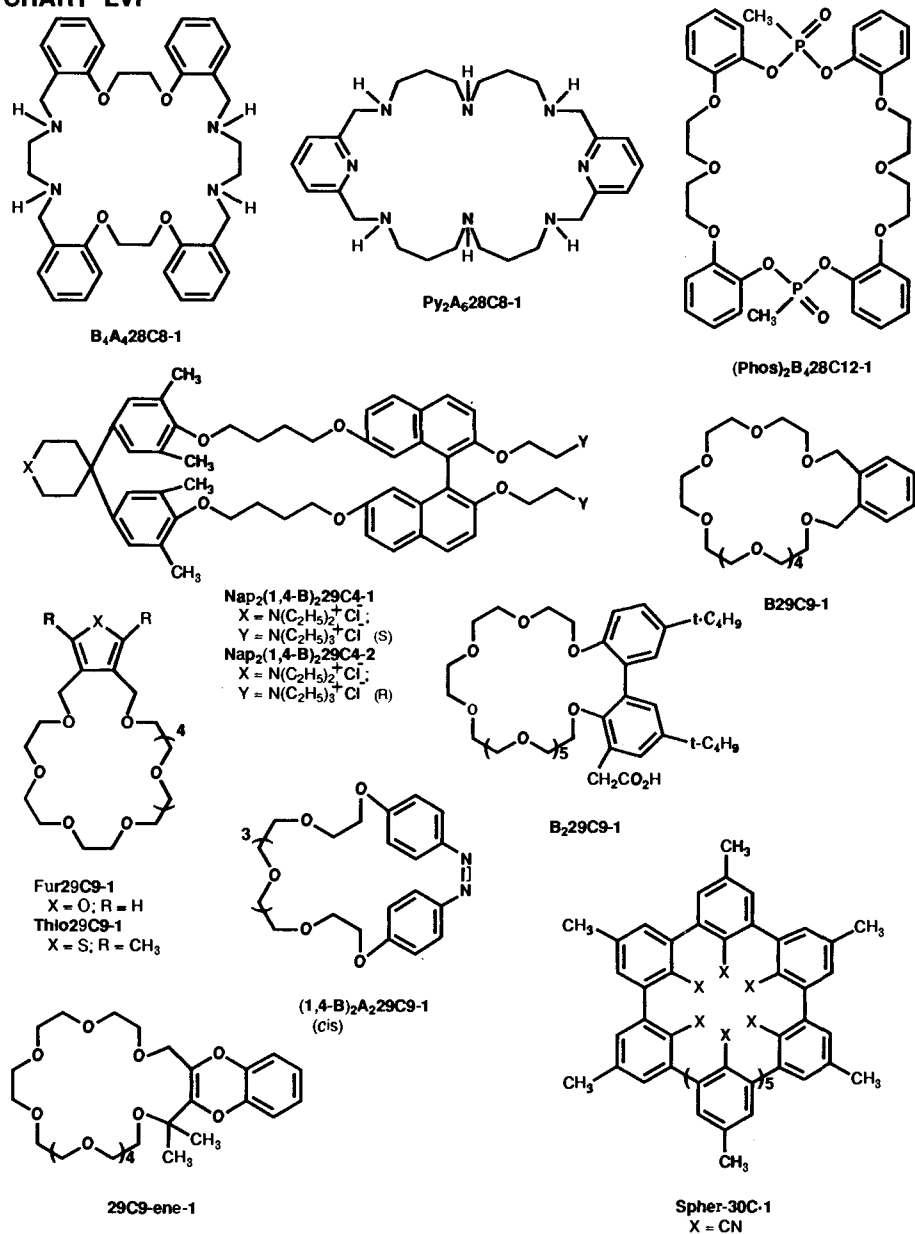
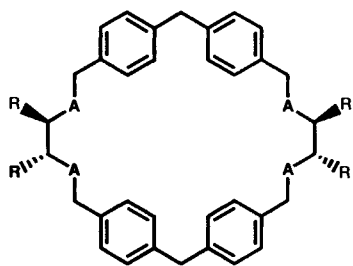
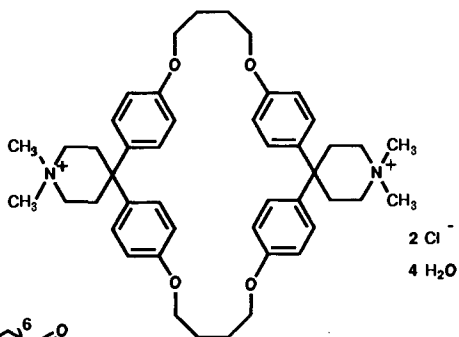


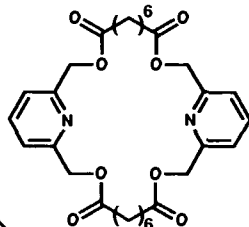
CHART LVII



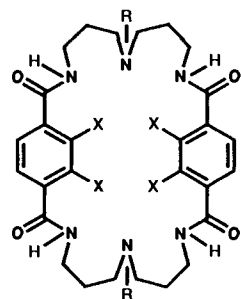
(1,4-B)₄A₃30C4-1
A = O; R = CO₂⁻
(1,4-B)₄A₄30C4-1
A = NH; R = H



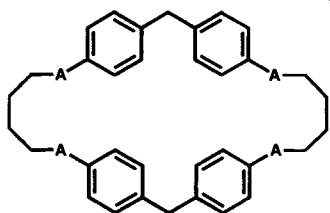
(1,4-B)₄A₃30C4-2
2 Cl⁻
4 H₂O



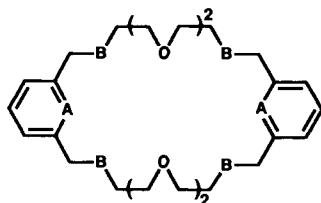
K₄Py₂30C6-1



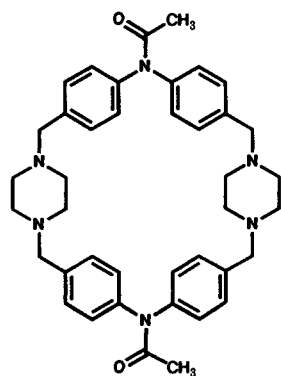
K₄(1,4-B)₂A₆A₆30C6-1
R = CH₂CO₂H; X = OH



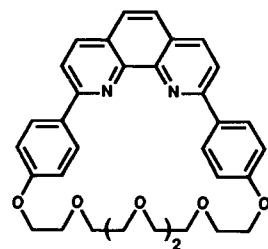
(1,4-B)₄A₄30C4-2
A = NH
(1,4-B)₄A₄30C4-3
A = N(CH₃)₂⁺



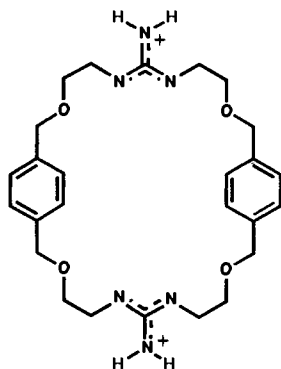
(1,3-B)₂30C8-1
A = CH; B = O
Py₂A₄30C8-1
A = N; B = NH



(1,4-B)₄A₆30C6-1

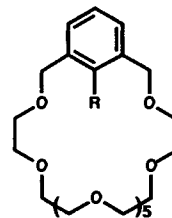


Phen(1,4-B)₂30C8-1

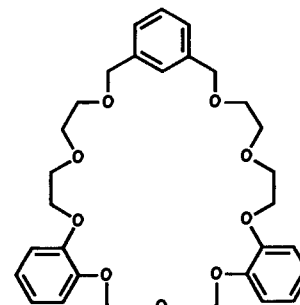


(Guan)₂(1,4-B)₂30C8-1

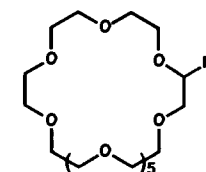
CHART LVIII



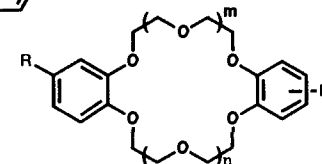
(1,3-B)30C9-1
R = H
(1,3-B)30C9-2
R = CO₂H
(1,3-B)30C9-3
R = CO₂CH₃



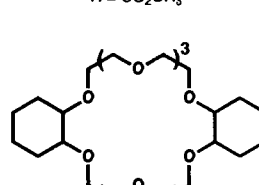
(1,3-B)B₂30C9-1



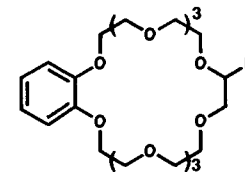
30C10-1
R = CH₂O-[2-CO₂H-
4-C₁₀H₂₁C₆H₁₃]



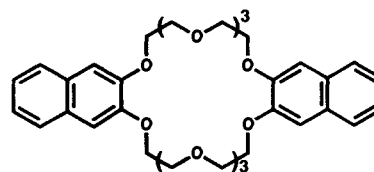
B₂30C10-1
R = H; m = 1; n = 5
B₂30C10-2
R = H; m = 0; n = 6
B₂30C10-3
R = H; m, n = 3
B₂30C10-4
R = CH₃; m, n = 3
B₂30C10-5
R = C₂H₅; m, n = 3
B₂30C10-6
R = t-C₄H₉; m, n = 3
B₂30C10-7
R = CHO; m, n = 3
B₂30C10-8
R = CH₂OH; m, n = 3



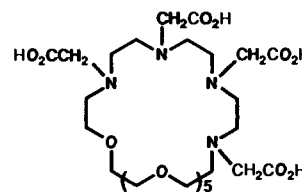
Cy₂30C10-1



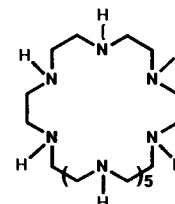
B₃30C10-1
R = H
B₃30C10-2
R = CH₂OCH(CO₂H)-
C₆H₁₇



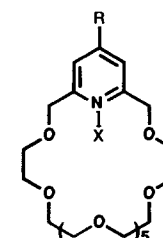
(2,3-Nap)₂30C10-1



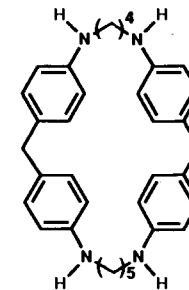
A₄30C10-1



A₁₀30C10-1

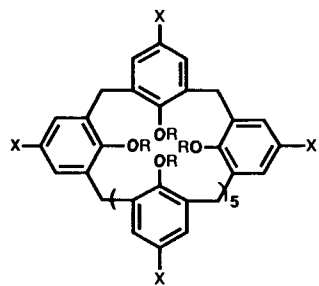


Py₃30C10-1
R = H;
X = not present
Py₃30C10-2
R = C₆H₅;
X = not present
Py₃30C10-3
R = H; X = H⁺

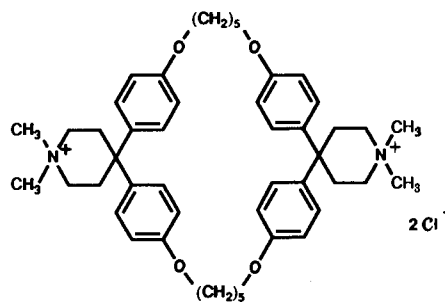


(1,4-B)₄A₄A₃1C4-1

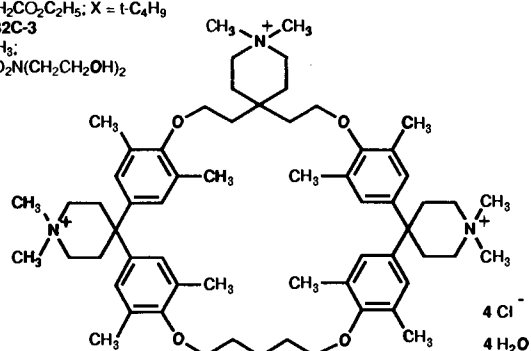
CHART LIX



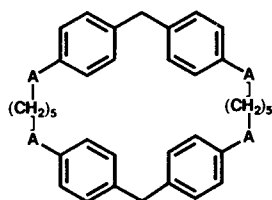
Calix[8]-32C-1
R = H; X = SO₃Na
Calix[8]-32C-2
R = CH₂CO₂C₂H₅; X = t-C₄H₉
Calix[8]-32C-3
R = CH₃;
X = SO₂N(CH₂CH₂OH)₂



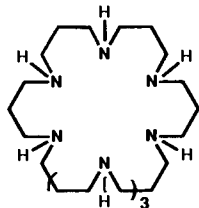
(1,4-B)₄32C4-1



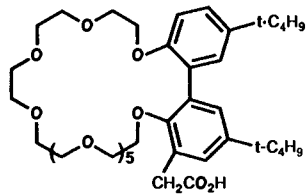
4 Cl⁻
4 H₂O



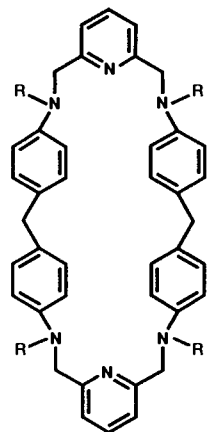
(1,4-B)₄A₄32C4-1
A = NH
(1,4-B)₄A₄32C4-2
A = N(CH₃)₂⁺



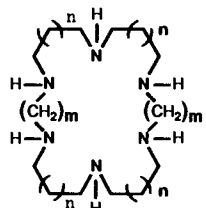
A₉32C8-1



B₂32C10-1

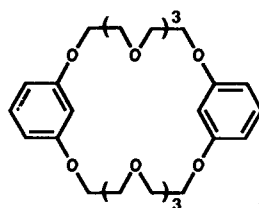


Py₂(1,4-B)₄A₄32C6-1
R = C(O)CH₂N(CH₃)₃⁺Cl⁻

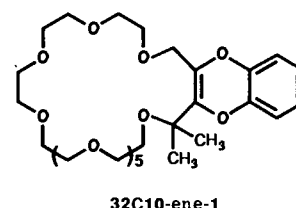


A₆32C6-1
n = 0; m = 9
A₆32C6-2
n = 1; m = 7

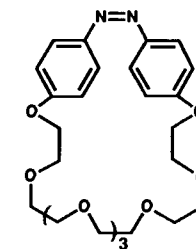
CHART LX



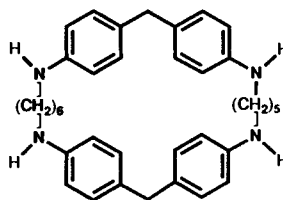
(1,3-B)₂32C10-1



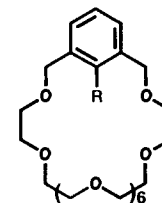
32C10-ene-1



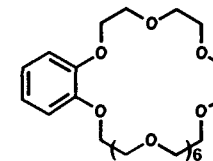
(1,4-B)₂A₂32C10-1
(cis)



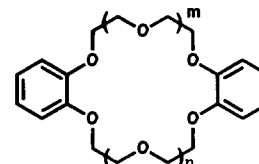
(1,4-B)₄A₄33C4-1



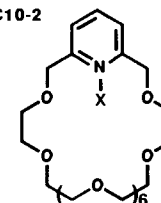
(1,3-B)33C10-1
R = CO₂H
(1,3-B)33C10-2
R = SO₃H



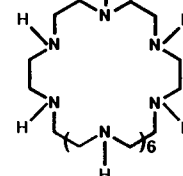
B33C11-1



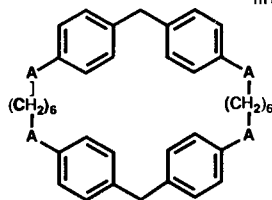
B₂33C11-1
m = 2; n = 5
B₂33C11-2
m = 3; n = 4



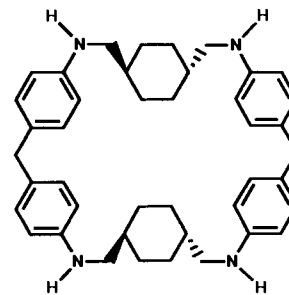
Py33C11-1
X = not present
Py33C11-2
X = H⁺



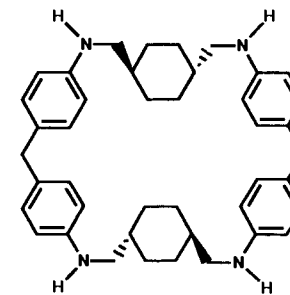
A₁₁33C11-1



(1,4-B)₄A₄34C4-1
A = NCH₂CH₂NH₂
(1,4-B)₄A₄34C4-2
A = NH or
A = N-[4-SO₂C₆H₄CH₃] or
A = N(CH₃)₂⁺Cl⁻
(1,4-B)₄A₄34C4-3
A = N(CH₃)₂⁺Cl⁻



Cy₂(1,4-B)₄A₄34C4-1



Cy₂(1,4-B)₄A₄34C4-2

CHART LXI

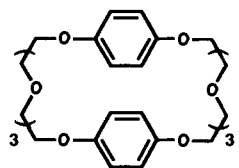
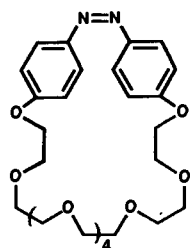
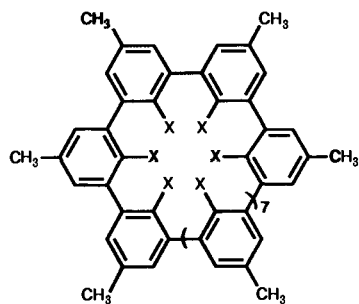
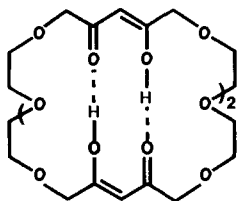
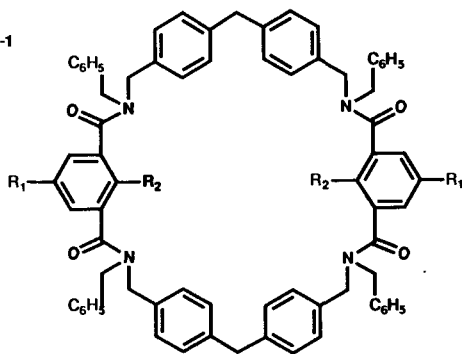
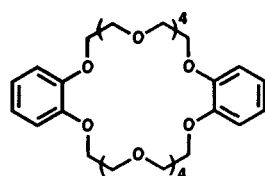
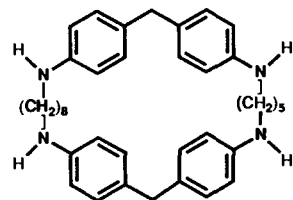
(1,4-B)₂34C10-1(1,4-B)₂A₂35C11-1
(cis)Spher-36C-1
X = CNK₃36C9-triene-1K₄(1,4-B)₄(1,3-B)₂A₄36C4-1
R₁ = H; R₂ = NH₂
K₄(1,4-B)₄(1,3-B)₂A₄36C4-2
R₁ = NH₂; R₂ = HB₂36C12-1(1,4-B)₄A₄35C4-1

CHART LXII

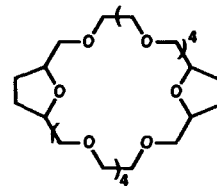
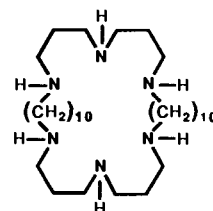
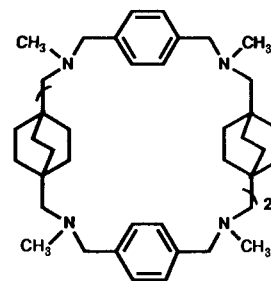
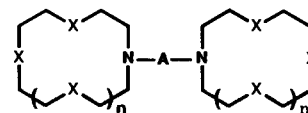
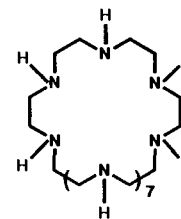
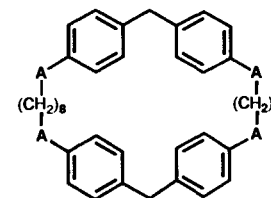
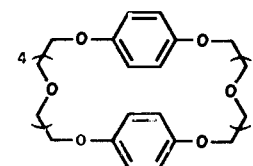
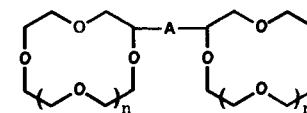
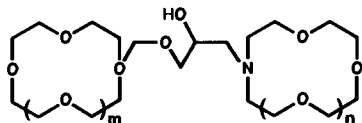
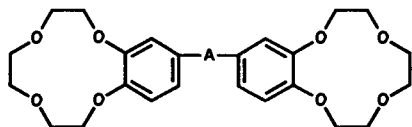
(THF)₂36C12-1
(syn-cis-cis+
anti-cis-cis)A₆38C6-1(1,4-B)₃A₆42C6-1(A₉C₃)₂-1
n = 0; X = O; A = CH₂CH(C₁₂H₂₅)CH₂
(A₉C₃)₂-2
n = 0; X = O; A = (CH₂)₂OCH₂CH-
(C₁₂H₂₅)CH₂O(CH₂)₂
(A₉C₃)₂-1
n = 0; X = N; A = C₂H₄A₁₂36C12-1(1,4-B)₄A₄38C4-1
A = NH or
A = N-[4-SO₂C₆H₄CH₃] or
A = N(CH₃)₂Cl⁻(1,4-B)₂40C12-1(12C₄)₂-1
n = 1; A = CH₂CO₂CO₂CH₂
(12C₄)₂-2
n = 1; A = CH₂OC(O)C(C₂H₅)₂C(O)OCH₂
(12C₄)₂-3
n = 1; A = CH₂OC(O)C(CH₃)(C₁₂H₂₅)C(O)OCH₂
(12C₄)₂-4
n = 1; A = CH₂OC(O)(CH₂)₂C(O)OCH₂
(12C₄)₂-5
n = 1; A = CH₂OCH₂(1,2-C₆H₄)CH₂OCH₂
(12C₄)₂-6
n = 1; A = CH₂OCH₂(1,3-C₆H₄)CH₂OCH₂
(12C₄)₂-7
n = 1; A = CH₂OCH₂(1,4-C₆H₄)CH₂OCH₂
(12C₄)₂-8
n = 1; A = CH₂O(2,6-C₆H₃N)OCH₂
(12C₄)₂-9
n = 1; A = CH₂OC(O)C(CH₃)C(CH₃)₂CH(O)COCH₂
(15C₅)₂-1
n = 2; A = CH₂OC(O)C(CH₃)(C₁₂H₂₅)C(O)OCH₂
(15C₅)₂-2
n = 2; A = CH₂OC(O)C(CH₃)C(CH₃)₂CH(O)COCH₂
(18C₆)₂-1
n = 3; A = CH₂OC(O)C(CH₃)(C₁₂H₂₅)C(O)OCH₂

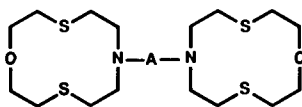
CHART LXIII



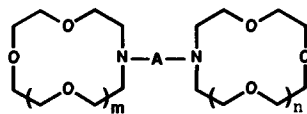
- (12C4)(A12C4)-1
m, n = 1;
(12C4)(A15C5)-1
m = 1; n = 2;
(12C4)(A18C6)-1
m = 1; n = 3;
(15C5)(A12C4)-1
m = 2; n = 1;
(15C5)(A15C5)-1
m = 2; n = 2;
(15C5)(A18C6)-1
m = 2; n = 3;
(18C6)(A12C4)-1
m = 3; n = 1;
(18C6)(A15C5)-1
m = 3; n = 2;
- (18C6)(A18C6)-1
m, n = 3;
(21C7)(A12C4)-1
m = 4; n = 1;
(21C7)(A15C5)-1
m = 4; n = 2;
(21C7)(A18C6)-1
m = 4; n = 3;
(24C8)(A12C4)-1
m = 5; n = 1;
(24C8)(A15C5)-1
m = 5; n = 2;
(24C8)(A18C6)-1
m = 5; n = 3;



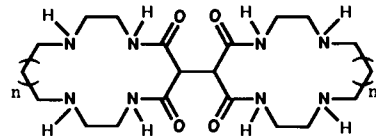
(B12C4)₂-1
A = NHC(O)(CH₂)₃C(O)NH



(AT₂12C4)₂-1
A = CH₂{1,4-C₆H₄}CH₂

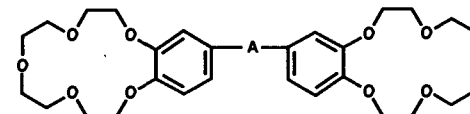


- (A12C4)₂-1
m, n = 1; A = (CH₂)₂
(A12C4)₂-2
m, n = 1; A = (CH₂)₃
(A12C4)₂-3
m, n = 1;
A = CH₂CH(C₁₂H₂₅)CH₂
(A12C4)₂-4
m, n = 1;
A = CH₂CH(OH)CH₂
(A12C4)₂-5
m, n = 1;
A = CH₂CH(OCH₃)CH₂
(A12C4)₂-6
m, n = 1;
A = CH₂CH(OCH₂C₆H₅)CH₂
(A12C4)₂-7
m, n = 1; A = (CH₂)₄
(A12C4)₂-8
m, n = 1;
A = CH₂CH(OH)(CH₂)₂
(A12C4)₂-9
m, n = 1; A = (CH₂)₅
(A12C4)₂-10
m, n = 1;
A = (CH₂)₂OCH₂CH
(C₁₂H₂₅)CH₂O(CH₂)₂
(A12C4)₂-11
m, n = 1;
A = (CH₂)₂OC(O)C(CH₃)
(C₁₂H₂₅)C(O)O(CH₂)₂
(A12C4)₂-12
m, n = 1; A = (CH₂)₁₀
(A12C4)(A15C5)-1
m = 1; n = 2;
A = CH₂CH(OH)CH₂
(A12C4)(A18C6)-1
m = 1; n = 3;
A = CH₂CH(OH)CH₂



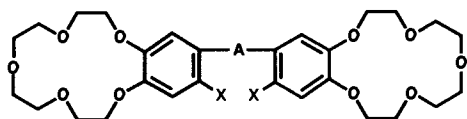
(K₂A₄13C4)₂-1
n = 0
(K₂A₄14C4)₂-1
n = 1

CHART LXIV

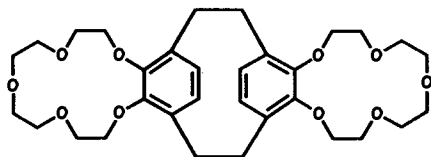


- (B15C5)₂-1
A = CH₂
(B15C5)₂-2
A = (CH₂)₅
(B15C5)₂-3
A = (CH₂)₈
(B15C5)₂-4
A = (CH₂)₉
(B15C5)₂-5
A = (CH₂)₁₀
(B15C5)₂-6
A = O(CH₂)₂O(CH₂)₂O(CH₂)₂O
(B15C5)₂-7
A = C(O)(CH₂)₃C(O)
(B15C5)₂-8
A = C(O)(CH₂)₆C(O)
(B15C5)₂-9
A = C(O)(CH₂)₇C(O)
(B15C5)₂-10
A = C(O)(CH₂)₈C(O)
(B15C5)₂-11
A = CH=N(CH₂)₂N=CH
(B15C5)₂-12
A = CH=N(CH₂)₄N=CH
(B15C5)₂-13
A = CH=N(CH₂)₆N=CH
(B15C5)₂-14
A = CH=N(CH₂)₉N=CH
(B15C5)₂-15
A = CH=N(CH₂)₁₀N=CH
(B15C5)₂-16
A = CH=N(1,4-C₆H₄)CH₂(1,4-C₆H₄)N=CH
(mixture of isomers)
(B15C5)₂-17
A = CH=NNHC(O)CH₂C(O)NHN=CH
(B15C5)₂-18
A = CH=NNHC(O)(CH₂)₂C(O)NHN=CH
(B15C5)₂-19
A = CH=NNHC(O)(CH₂)₃C(O)NHN=CH
(B15C5)₂-20
A = CH=NNHC(O)(CH₂)₄C(O)NHN=CH
(B15C5)₂-21
A = CH=NNHC(O)(CH₂)₅C(O)NHN=CH
- (B15C5)₂-22
A = CH=NNHC(O)(CH₂)₆C(O)NHN=CH
(B15C5)₂-23
A = CH=NNHC(O)(CH₂)₇C(O)NHN=CH
(B15C5)₂-24
A = CH=NNHC(O)(CH₂)₈C(O)NHN=CH
(B15C5)₂-25
A = CH=NNHC(O)(1,2-C₆H₄)C(O)NHN=CH
(B15C5)₂-26
A = C(O)NH
(B15C5)₂-27
A = C(O)NH(CH₂)₇C(O)NH
(B15C5)₂-28
A = C(O)AlaNH
(B15C5)₂-29
A = C(O)ProNH
(B15C5)₂-30
A = C(O)AlaNH
(B15C5)₂-31
A = C(O)ProAlaNH
(B15C5)₂-32
A = C(O)(Ala)₃NH
(B15C5)₂-33
A = C(O)AlaProAlaNH
(B15C5)₂-34
A = CH₂CH(NHC(O)OCH₂C₆H₅)
C(O)NHCH(CO₂CH₃)CH₂
(B15C5)₂-35
A = CH₂CHC(O)NHCHCH₂
┌ NHC(O) ┘
(B15C5)₂-36
A = NHC(O)(CH₂)₃C(O)NH
(B15C5)₂-37
A = CH(OH)(CH₂)₃(OH)CH
(B15C5)₂-38
A = CH(OH)(CH₂)₆(OH)CH
(B15C5)₂-39
A = CH(OH)(CH₂)₇(OH)CH
(B15C5)₂-40
A = CH(OH)(CH₂)₈(OH)CH
(B15C5)₂-41
A = CH₂O[2,2'-Bipy-3,3'-(CH₂)₂]OCH₂

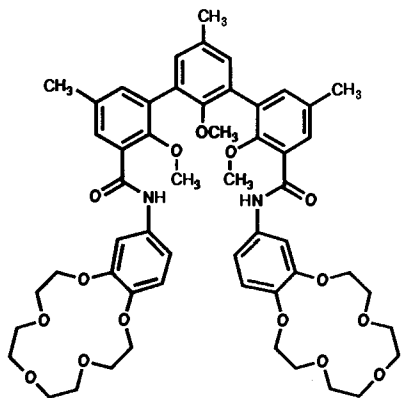
CHART LXV



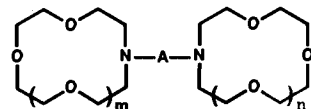
(B15C5)₂-42
 A = CH=N(CH₂)₂N=CH;
 X = OH
 (B15C5)₂-43
 A = NHC(O)O(CH₂)₂S(CH₂)₂OC(O)NH;
 X = NO₂



(B15C5)₂-43
 (achiral, sided)



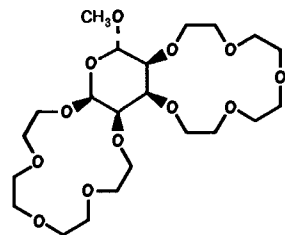
(B15C5)₂-45



(A15C5)₂-1
 m, n = 2; A = (CH₂)₂
 (A15C5)₂-2
 m, n = 2; A = (CH₂)₃
 (A15C5)₂-3
 m, n = 2; A = (CH₂)₄
 (A15C5)₂-4
 m, n = 2; A = (CH₂)₅
 (A15C5)₂-5
 m, n = 2; A = (CH₂)₁₀
 (A15C5)₂-6
 m, n = 2; A = CH₂CH(C₁₂H₂₅)CH₂
 (A15C5)₂-7
 m, n = 2; A = CH₂CH(OH)CH₂
 (A15C5)₂-8
 m, n = 2; A = CH₂CH(OCH₃)CH₂
 (A15C5)₂-9
 m, n = 2; A = CH₂CH(OCH₂C₆H₅)CH₂
 (A15C5)₂-10
 m, n = 2; A = CH₂CH(OH)(CH₂)₂
 (A15C5)₂-11
 m, n = 2; A = CH₂CH(OH)CH(OH)CH₂
 (A15C5)₂-12
 m, n = 2; A = CH₂CH—CHCH₂

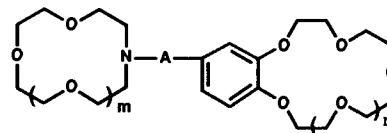


(A15C5)₂-13
 m, n = 2; A = (CH₂)₂O(CH₂)₂
 (A15C5)₂-14
 m, n = 2; A = (CH₂)₂OCH₂CH—
 (C₁₂H₂₅)CH₂O(CH₂)₂
 (A15C5)₂-15
 m, n = 2; A = (CH₂)₂OC(O)C(CH₃)—
 (C₁₂H₂₅)C(O)O(CH₂)₂
 (A15C5)(A18C6)-1
 m = 2; n = 3; A = CH₂CH(OH)CH₂

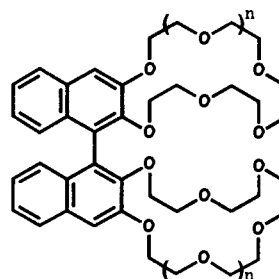


(15C5)(16C5)-1

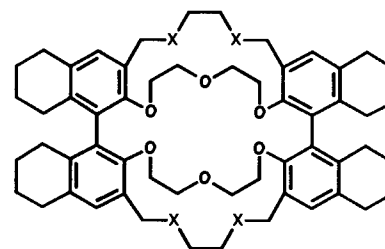
CHART LXVI



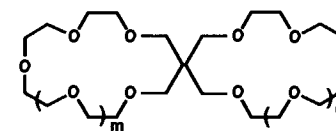
(A15C5)(B15C5)-1
 m = 2, n = 1; A = (CH₂)₂O(CH₂)₂O
 (A15C5)(B18C6)-1
 m, n = 2; A = (CH₂)₂O(CH₂)₂O



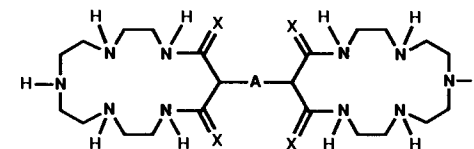
(Nap16C5)₂-1
 n = 0
 (Nap18C6)₂-1
 n = 1



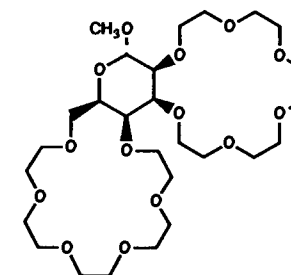
[(H₄Nap)₂17C5]₂-1
 X = O (R, S)
 [(H₄Nap)₂17C5]₂-2
 X = O (R, R) (S, S)
 [(H₄Nap)₂17C5]₂-1
 X = S (R, R)



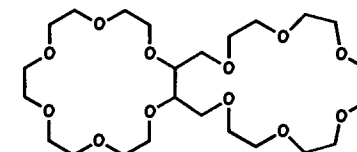
(16C5)₂-1
 m, n = 1
 (19C6)(13C4)-1
 m = 2; n = 0
 (19C6)₂-1
 m, n = 2



(A₅16C5)₂-1
 A = (CH₂)₃; X = H₂
 (A₅16C5)₂-2
 A = (CH₂CH₂O)₂CH₂CH₂;
 X = H₂
 (K₂A₅16C5)₂-1
 A = (CH₂)₃; X = O



(18C6)(19C6)-1



(18C6)(20C6)-1

CHART LXVII

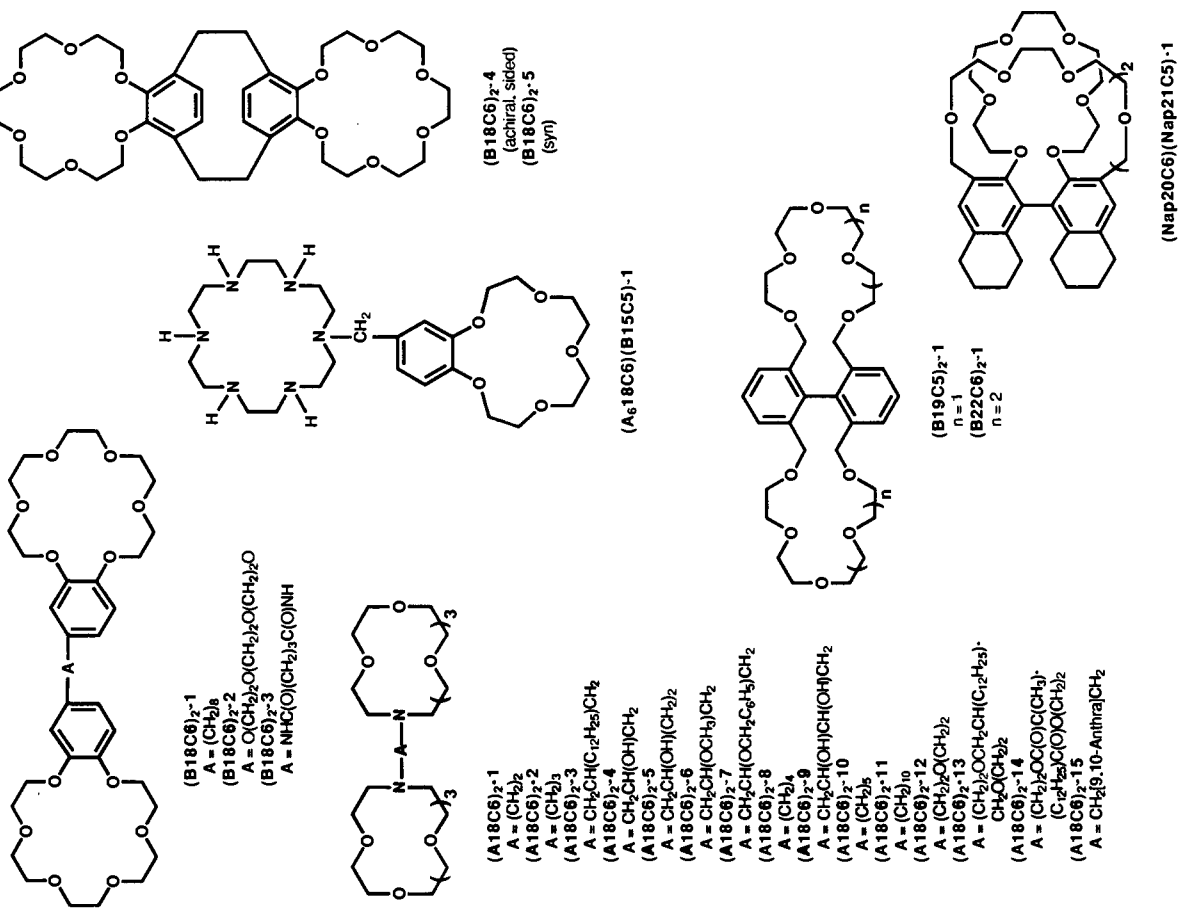


CHART LXVIII

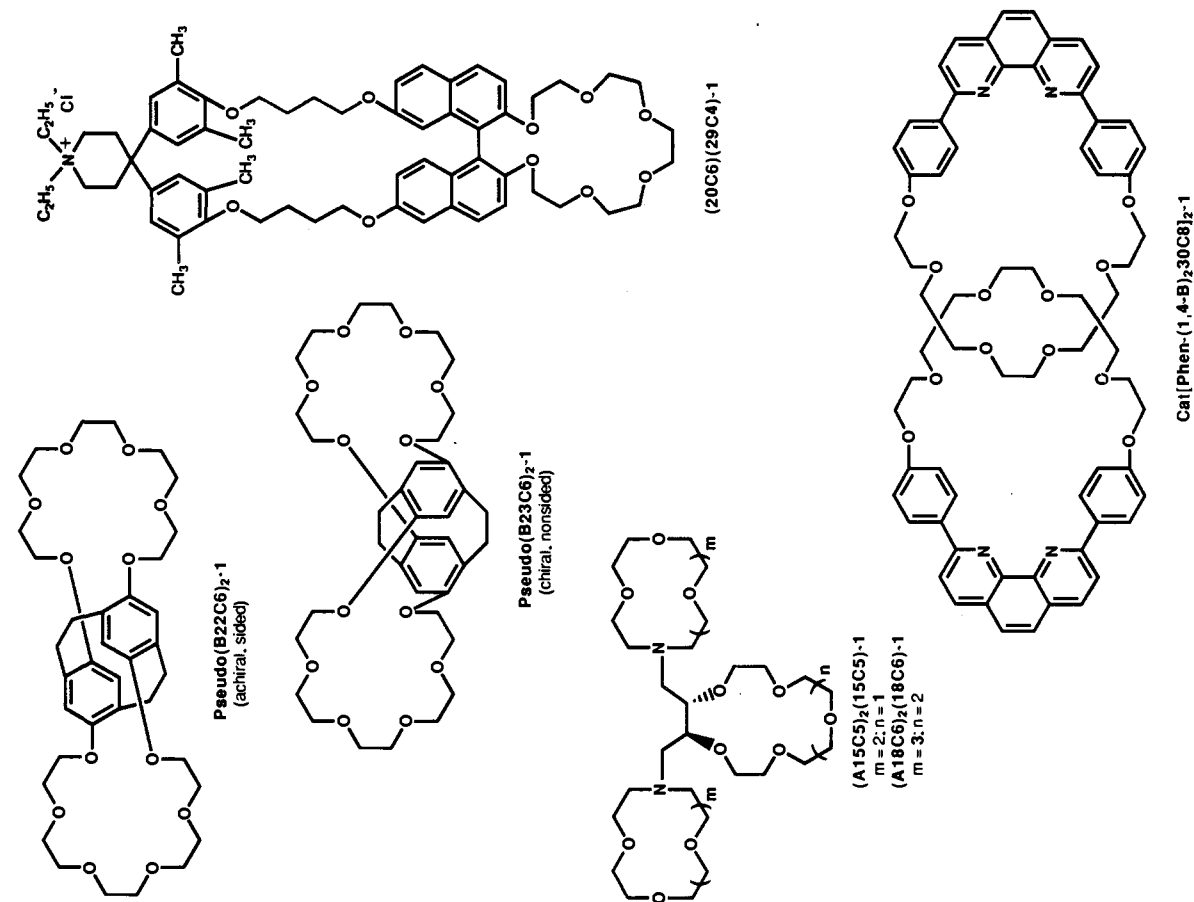


CHART LXIX

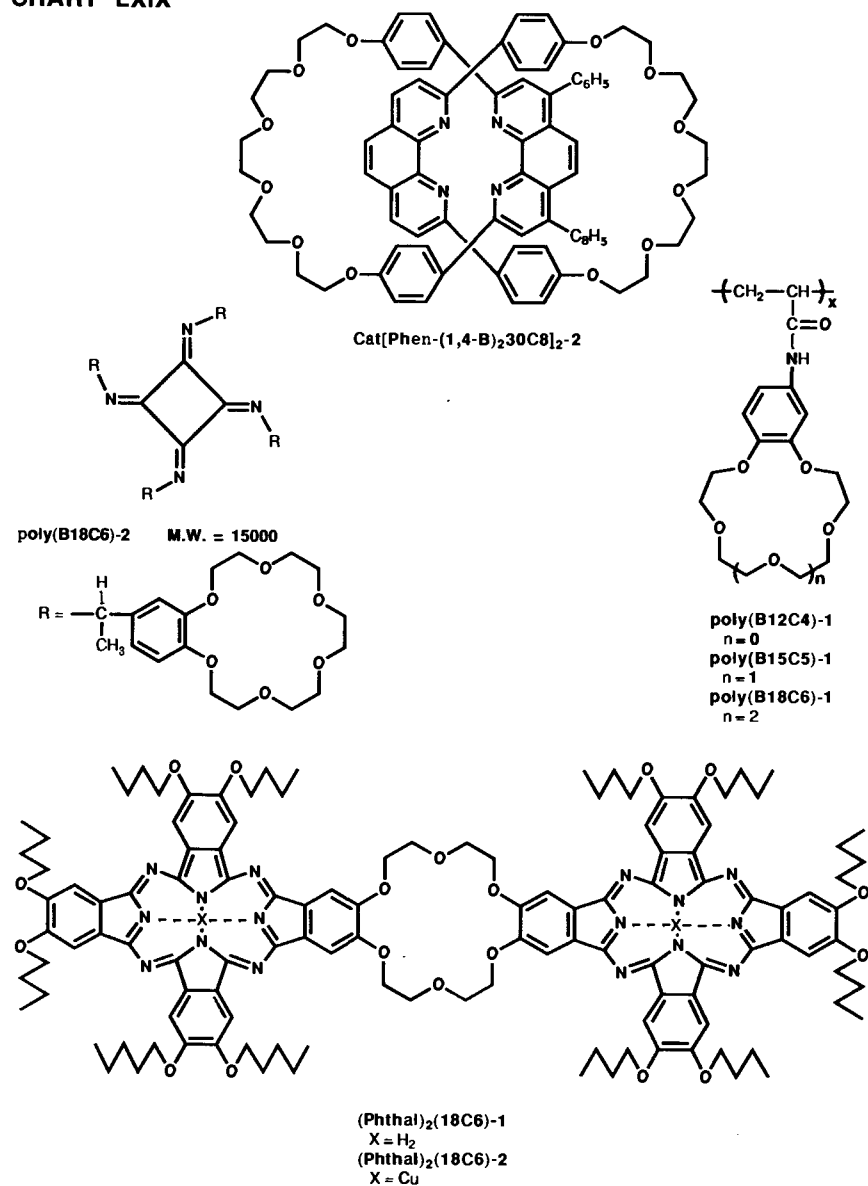


CHART LXX

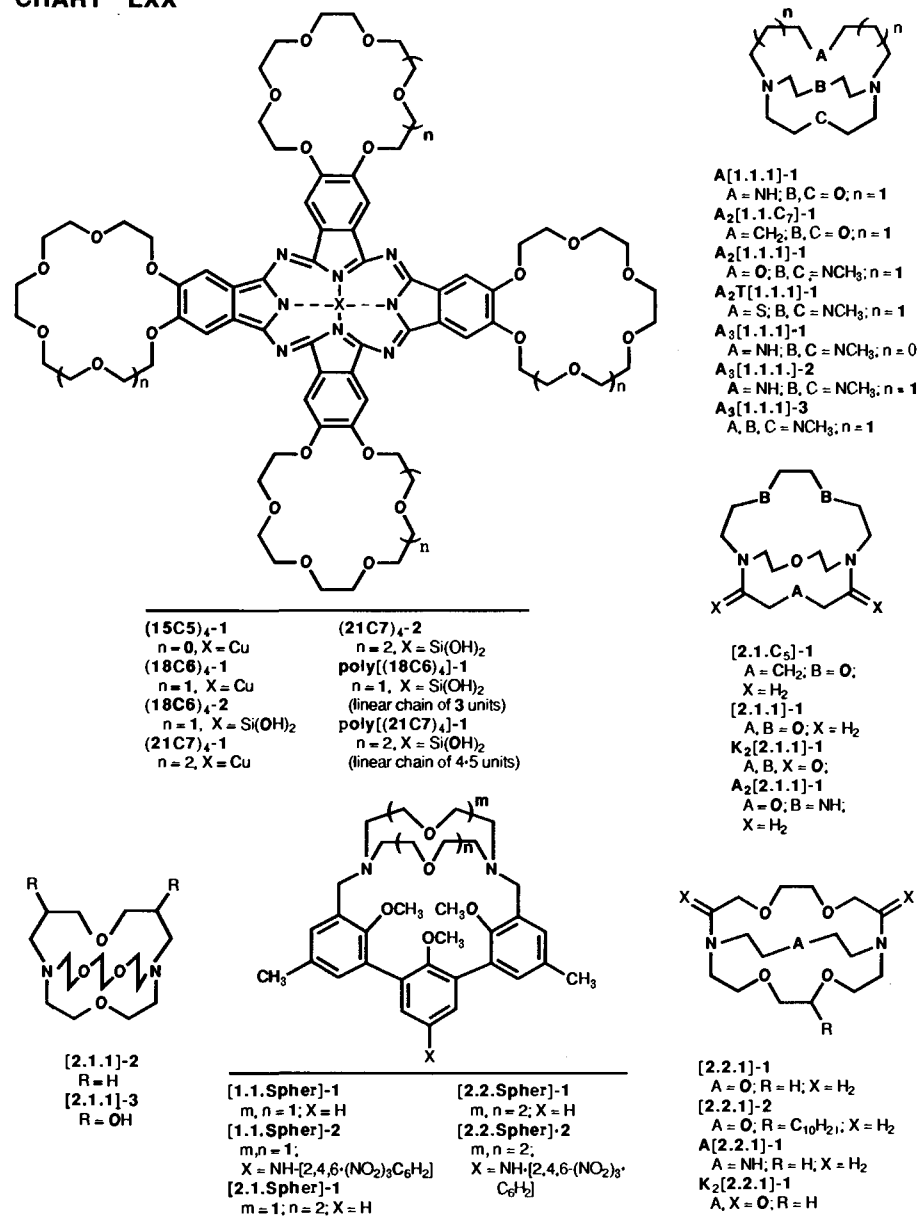
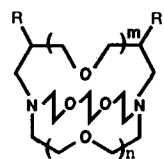
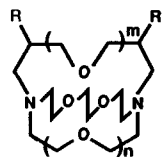


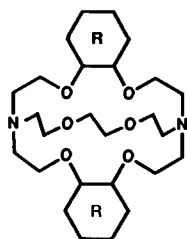
CHART LXXI



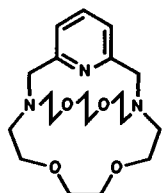
[2.2.1]-3
 $m = 2; n = 1; R = H$
 [2.2.1]-4
 $m = 1; n = 2; R = H$
 [2.2.1]-5
 $m = 2; n = 1; R = OH$
 [2.2.1]-6
 $m = 1; n = 2; R = OH$



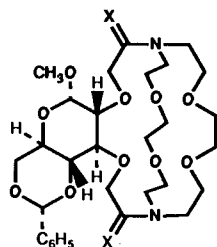
[2.2.2]-4
 $m, n = 2; R = H$
 [2.2.2]-5
 $m, n = 2; R = OH$



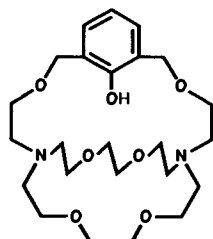
$B_2[2.2.2]-1$
 $R = \text{benzene}$
 $Cy_2[2.2.2]-1$
 $R = \text{cyclohexane}$



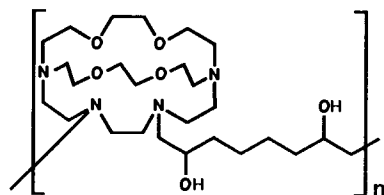
Py[2.2.1]-1



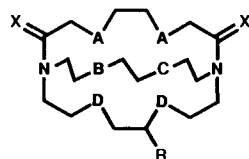
[2.2.2]-3
 $X = H_2$
 $K_2[2.2.2]-2$
 $X = O$



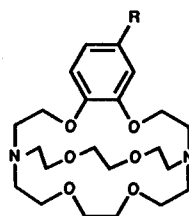
(1,3-B)[2.2.2]-1



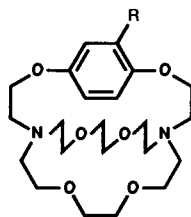
poly($A_2[2.2.2]-1$)
 $n = \text{av. } 7$



[2.2.2]-1
 $A, B, C, D = O; X = H_2; R = H$
 [2.2.2]-2
 $A, B, C, D = O; X = H_2; R = C_{10}H_{21}$
 [2.2.Ca]-1
 $A, B, C = O; D = CH_2; X = H_2; R = H$
 $K_2[2.2.2]-1$
 $A, B, C, D, X = O; R = H$
 $A_2[2.2.2]-1$
 $A, B, C = O; D = NCH_2CH_2OH;$
 $X = H_2; R = H$
 $T_2[2.2.2]-1$
 $A, B, C = O; D = S; X = H_2; R = H$
 $T_3[2.2.2]-1$
 $A, B = O; C, D = S; X = H_2; R = H$

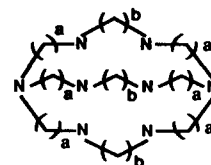


$B[2.2.2]-1$
 $R = H$
 $B[2.2.2]-2$
 $R = NH-[2,4-(NO_2)_2-6-CF_3C_6H_2]$

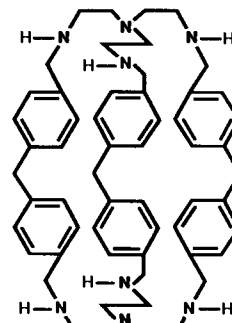


(1,4-B)[2.2.2]-1
 $R = H$
 (1,4-B)[2.2.2]-2
 $R = OCH_3$

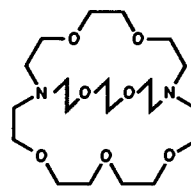
CHART LXXII



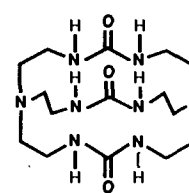
$A_6[2.2.2]-1$
 $a, b = 3$
 $A_6[2.2.2]-2$
 $a = 2; b = 5$



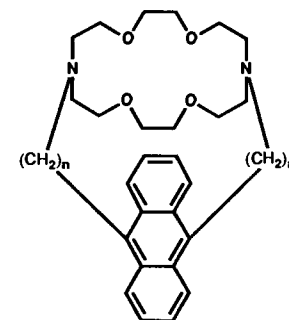
(1,4-B) $_6A_6[2.2.2]-1$



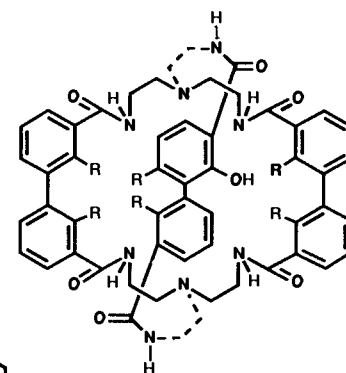
[3.2.2]-1



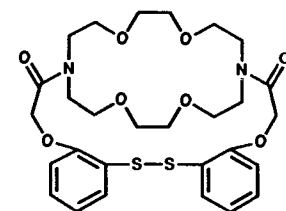
$K_3A_6[2.2.2]-1$



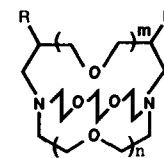
[2.2.Anthra]-1
 $n = 2$
 [2.2.Anthra]-2
 $n = 3$



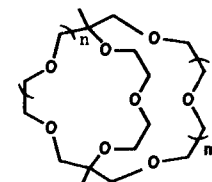
(1,3-B) $_6A_6[2.2.2]-1$
 $R = OCH_3$



[2.2.B $_2T_2$]-1

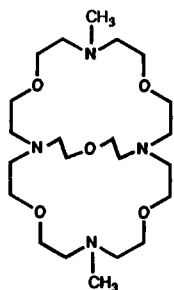


[3.2.2]-2
 $m = 3; n = 2; R = H$
 [3.2.2]-3
 $m = 3; n = 2; R = OH$

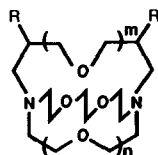


Carbon[3.2.2]-1
 $m = 0; n = 1$
 Carbon[3.3.2]-1
 $m, n = 1$
 Carbon[3.3.3]-1
 $m = 1; n = 2$

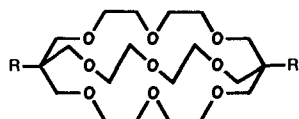
CHART LXXIII



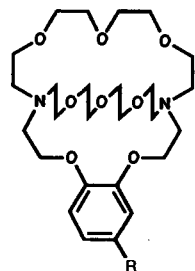
A₂[3.3.1]-1



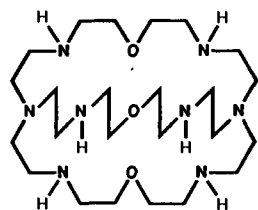
[3.3.2]-1
m, n = 3; R = H
[3.3.2]-2
m, n = 3; R = OH



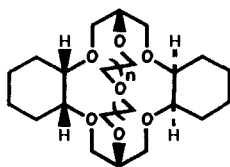
Carbon[3.3.3]-2
R = CH₃
Carbon[3.3.3]-3
R = CH₂OH
Carbon[3.3.3]-4
R = CH₂OCH₂C₆H₅



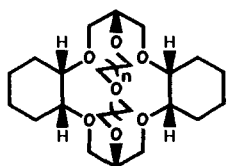
B[3.3.2]-1
R = NH[2,4,6-(NO₂)₃C₆H₂]
B[3.3.2]-2
R = NH[2,4-(NO₂)₂-6-CF₃C₆H₂]



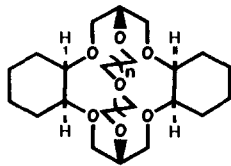
A₆[3.3.3]-1



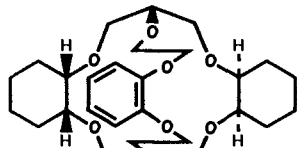
Cy₂Carbon[3.2.2]-1
n = 1; in-out
Cy₂Carbon[4.2.2]-1
n = 2; in-out



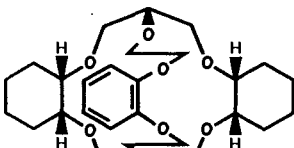
Cy₂Carbon[3.2.2]-2
n = 1; in-in
Cy₂Carbon[4.2.2]-2
n = 2; in-in



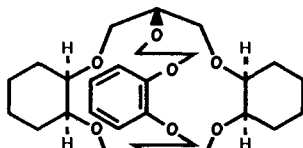
Cy₂Carbon[3.2.2]-3
n = 1; out-out
Cy₂Carbon[4.2.2]-3
n = 2; out-out



BCy₂[4.2.2]-1
in-out

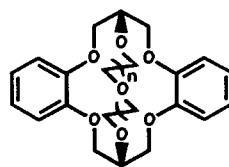


BCy₂[4.2.2]-2
in-in

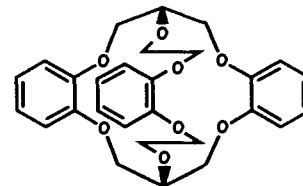


BCy₂[4.2.2]-3
out-out

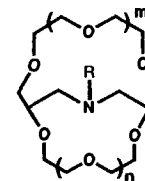
CHART LXXIV



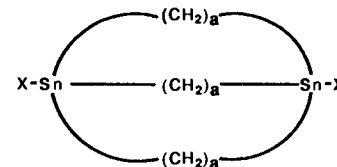
B₂Carbon[3.2.2]-1
n = 1
B₂Carbon[4.2.2]-1
n = 2



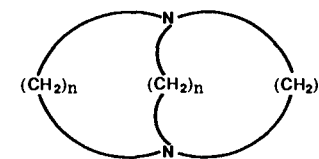
B₃Carbon[4.2.2]-1



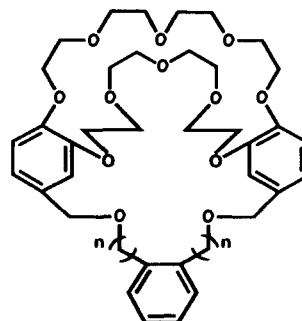
CarbonA[4.3.1]-1
m = 1; n = 2
R = (CH₂CH₂O)₂C₄H₉
CarbonA[4.4.1]-1
m, n = 2; R = C₁₀H₂₁
CarbonA[4.4.1]-2
m, n = 2
R = (CH₂CH₂O)₂C₄H₉
CarbonA[5.4.1]-1
m = 2; n = 3; R = C₁₀H₂₁



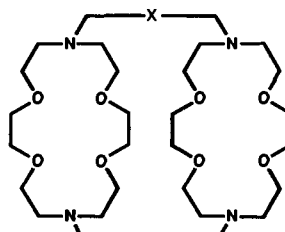
Sn₂[C₆, C₆, C₆]-1
a = 6; X = Cl
Sn₂[C₇, C₇, C₇]-1
a = 7; X = Cl
Sn₂[C₈, C₈, C₈]-1
a = 8; X = Cl
Sn₂[C₈, C₈, C₈]-2
a = 8; X = Br
Sn₂[C₁₀, C₁₀, C₁₀]-1
a = 10; X = Cl
Sn₂[C₁₀, C₁₀, C₁₀]-2
a = 10; X = Br
Sn₂[C₁₂, C₁₂, C₁₂]-1
a = 12; X = Cl
Sn₂[C₁₂, C₁₂, C₁₂]-2
a = 12; X = Br



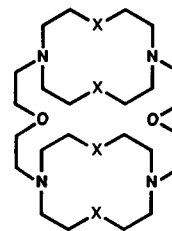
[C₇, C₇, C₇]-1
n = 7 (in-in)
[C₈, C₈, C₈]-1
n = 8 (in-in)
[C₉, C₉, C₉]-1
n = 9 (in-in)
[C₁₀, C₁₀, C₁₀]-1
n = 10 (in-in)



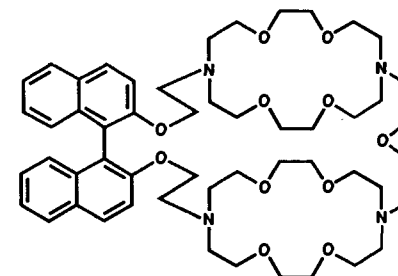
B(1,2,4-B)₂[5.5.2]-1
n = 0
B(1,2,4-B)₂[5.5.2]-2
n = 1



(1,2-B)₂[2.2/2.2]-1
X = 1, 2-C₆H₄
(1,4-B)₂[2.2/2.2]-1
X = 1, 4-C₆H₄
(B-B)₂[2.2/2.2]-1
X = 1, 4-C₆H₄, 1, 4-C₆H₄
(BOB)₂[2.2/2.2]-1
X = 1, 4-C₆H₄O-1,4-C₆H₄

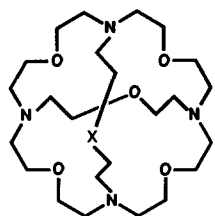


[1.1/1.1]-1
X = O
T₄[1.1/1/1]-1
X = S

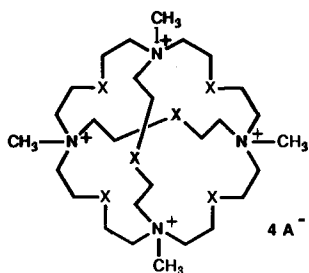


(Nap-Nap)[2.2/2.2]-1

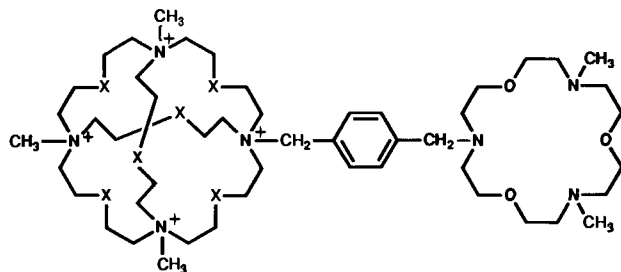
CHART LXXV



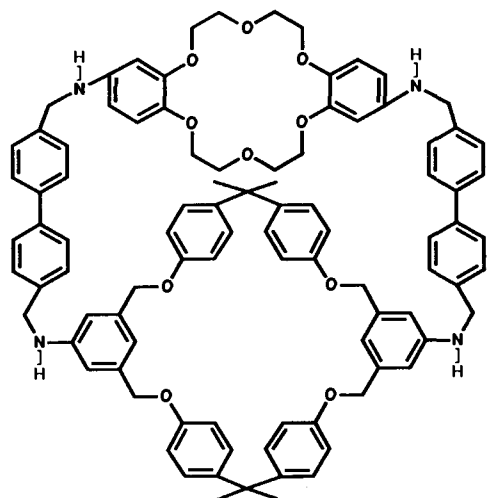
[3.3.1.1]-1
X = O
[3.3.1.C₃]-1
X = CH₂
[3.3.1.C₆]-1
X = CH₂CH₂



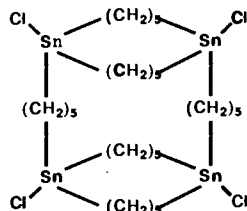
[3.3.1.1]⁴⁺·2
X = O; A = TsO
[1.1.C₆.C₆]⁴⁺·1
X = (CH₂)₂;
A = FSO₃, BF₄, TsO
[1.1.C₆.C₆]⁴⁺·2
X = (CH₂)₄; A = F



[1.1.C₆.C₆](A₃18C6)-1
X = (CH₂)₂

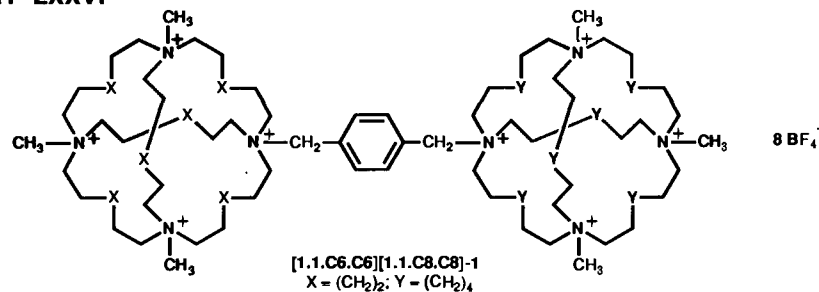


[B₂3.3/B₂(1,4-B)₄2.2]-1

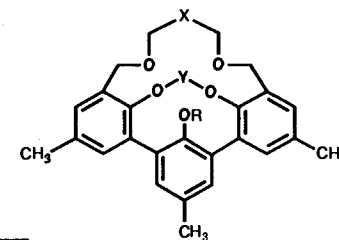
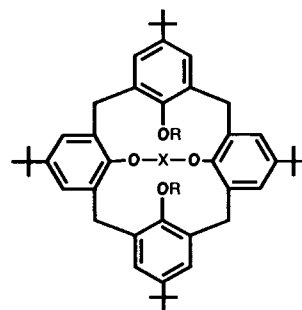


Sn₄[C₅.C₅/C₅.C₅]-1

CHART LXXVI



[1.1.C₆.C₆][1.1.C₈.C₈]-1
X = (CH₂)₂; Y = (CH₂)₄



Bridged Calix-1

R = CH₃;
X = -CH₂CH₂(OCH₂CH₂)₃-

Bridged Calix-2

R = CH₂C₆H₅;
X = -CH₂CH₂(OCH₂CH₂)₃-

Bridged Calix-3

R = CH₂C₆H₅;
X = -CH₂CH₂(OCH₂CH₂)₃-
(partial cone)

Bridged Calix-4

R = CH₃;
X = -CH₂CH₂(OCH₂CH₂)₄-

Bridged Calix-5

R = C₂H₅;
X = -CH₂CH₂(OCH₂CH₂)₃-
(cone)

Bridged Calix-6

R = C₂H₅;
X = -CH₂CH₂(OCH₂CH₂)₃-
(partial cone)

Bridged Calix-7

R = C₂H₅;
X = -CH₂CH₂(OCH₂CH₂)₃-
(1,3-alternate)

Bridged Calix-8

R = C₃H₇;
X = -CH₂CH₂(OCH₂CH₂)₃-
(cone)

Bridged Calix-9

R = C₃H₇;
X = -CH₂CH₂(OCH₂CH₂)₃-
(partial cone)

Bridged Calix-10

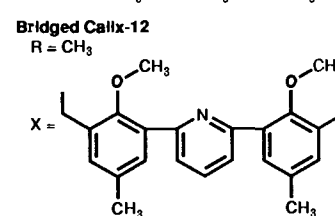
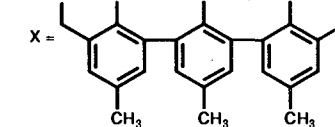
R = *i*-C₃H₇;
X = -CH₂CH₂(OCH₂CH₂)₃-
(partial cone)

Bridged Calix-11

R = CH₃

Bridged Calix-12

R = CH₃



Bridged Spher-1

R = H; X = CH₂OCH₂;
Y = CH₂CH₂OCH₂CH₂;

Bridged Spher-2

R = CH₃; X = CH₂OCH₂;
Y = CH₂CH₂OCH₂CH₂;

Bridged Spher-3

R = C₃H₇; X = CH₂OCH₂;
Y = CH₂CH₂OCH₂CH₂;

Bridged Spher-4

R = C₃H₇; X = CH₂OCH₂;
Y = (CH₂)₄;

Bridged Spher-5

R = C₃H₇; X = CH₂OCH₂;
Y = (CH₂)₅;

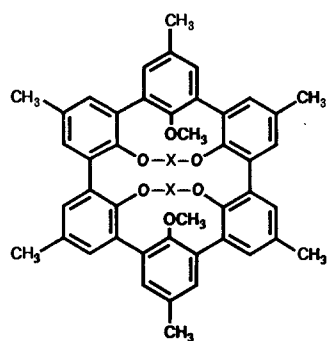
Bridged Spher-6

R = C₃H₇; X = 2,6-C₅H₃N;
Y = CH₂CH₂OCH₂CH₂;

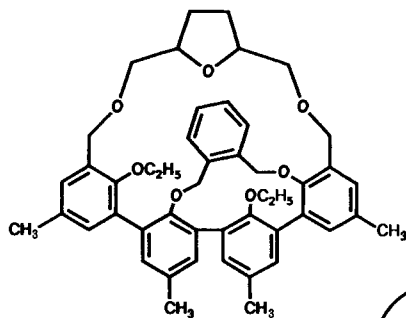
Bridged Spher-7

R = C₃H₇; X = CH₂OCH₂;
Y = CH₂[2,6-C₅H₃N]-CH₂;

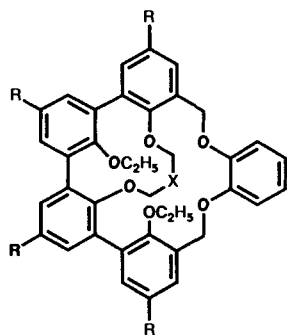
CHART LXXVII



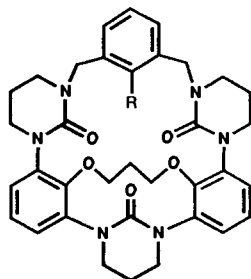
Bridged Spher-8
 $X = (CH_2)_3$
Bridged Spher-9
 $X = CH_2CH_2OCH_2CH_2$



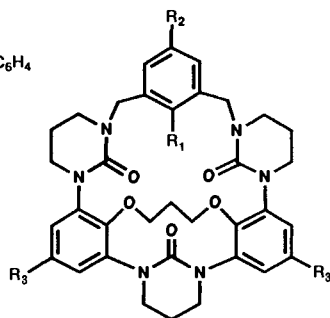
Bridged Spher-13
 (less polar isomer)
Bridged Spher-14
 (more polar isomer)



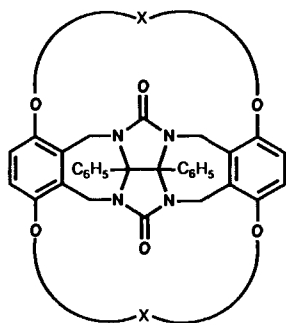
Bridged Spher-10
 $R = H; X = CH_2$
Bridged Spher-11
 $R = CH_3; X = CH_2$
Bridged Spher-12
 $R = CH_3; X = 1,2-C_6H_4$



Bridged Spher-15
 $R = 3,5-(CH_3)_2C_6H_3$

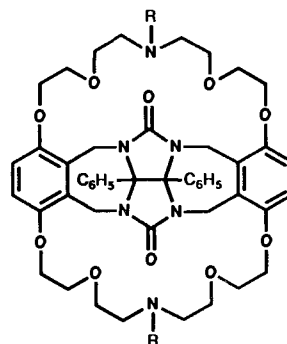


Bridged Spher-16
 $R_1 = OCH_3;$
 $R_2 = CH_3; R_3 = H$
Bridged Spher-17
 $R_1 = OCH_3;$
 $R_2, R_3 = CH_3$
Bridged Spher-18
 $R_1 = 3,5-(CH_3)_2C_6H_3;$
 $R_2, R_3 = H$

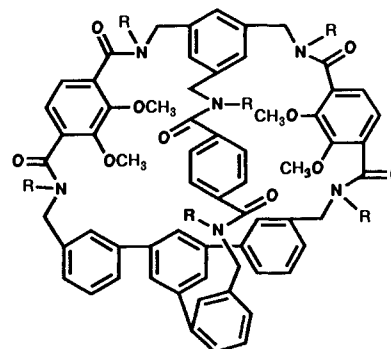


Basket-1
 $X = (CH_2CH_2O)_2CH_2CH_2$
Basket-2
 $X = (CH_2CH_2O)_3CH_2CH_2$
Basket-3
 $X = (CH_2CH_2O)_4CH_2CH_2$

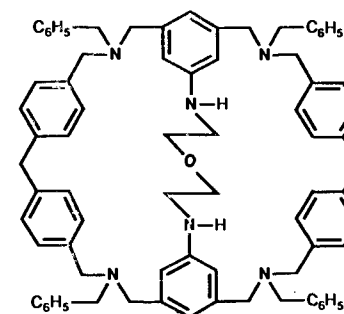
CHART LXXVIII



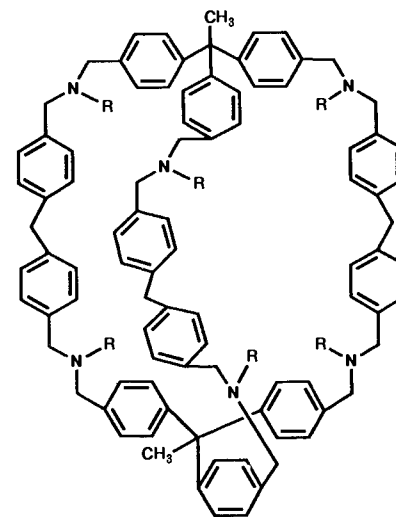
Basket-4
 $R = H$
Basket-5
 $R = CH_2C_6H_5$
Basket-6
 $R = CH_2CH_2OCH_2CH_2OH$
Basket-7
 $R = CH_2CH_2OCH_2CH_2OC(O)CH(NHC(O)CH_2C_6H_5)CH_2$



Azacyclophane-2
 $R = CH_2C_6H_5$

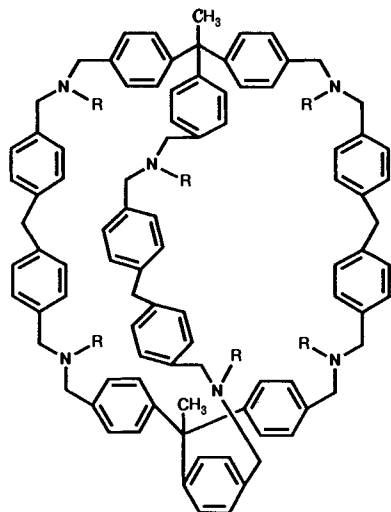


Azacyclophane-1

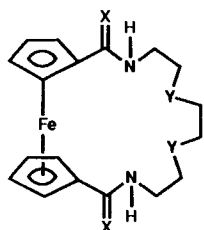


Azacyclophane-3
 $R = CH_3$ (CH_3 "out/out")

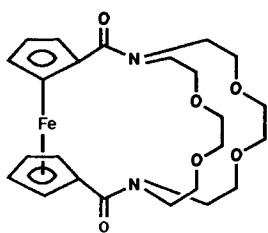
CHART LXXIX



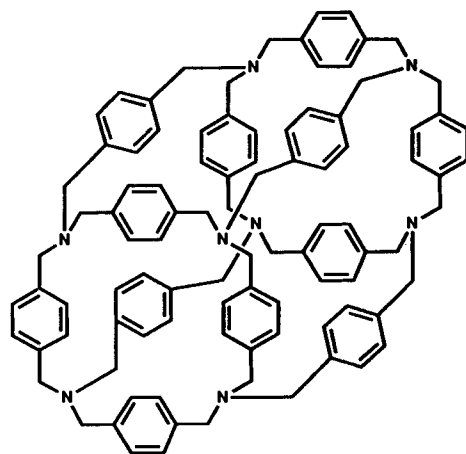
Azacyclophane-4
R = CH₃ (CH₃ "out/in")



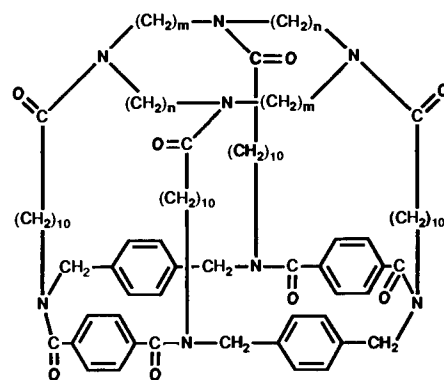
Ferrocene-1
X = O; Y = CH₂
Ferrocene-2
X, Y = O
Ferrocene-3
X = O; Y = S
Ferrocene-4
X = S; Y = O



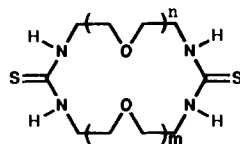
Ferrocene-5
Ferrocene-6



Azacyclophane-5

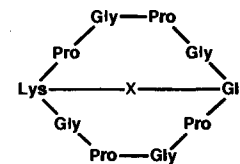


Azacyclophane-6
m = 3; n = 2 or
m = 2; n = 3

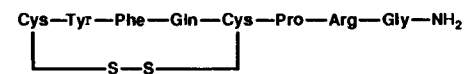


Cyclic Thiourea-1
1 ≤ n ≤ 3; 0 ≤ m ≤ 2

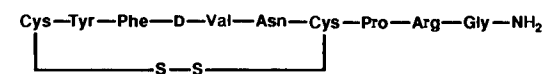
CHART LXXX



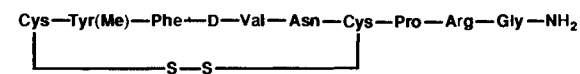
Peptide-1
X = Gly
Peptide-2
X = Gly-Gly



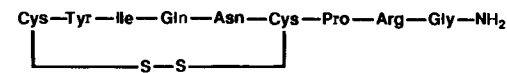
Peptide-3



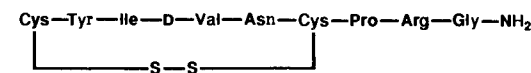
Peptide-4



Peptide-5

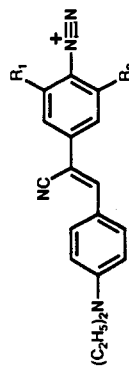


Peptide-6



Peptide-7

CHART LXXXI



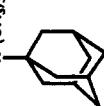
cation-1

R₁, R₂ = H

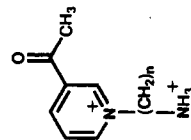
cation-2

R₁ = CH₃; R₂ = H

cation-3

R₁, R₂ = CH₃N⁺(CH₃)₃

cation-5

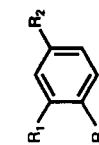
(1-adamantylmethyl-
ammonium)

cation-11

n = 2

cation-12

n = 4



cation-15

R₁ = OH; R₂ = CH₂CH₂NH₃⁺
(dopamine)

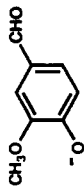
cation-16

R₁ = OH; R₂ = CH(OH)CH₂NH₂CH₃⁺
(adrenaline)

cation-17

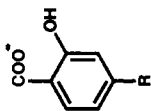
R₁ = OCH₃; R₂ = CH₂CH₂NH₃⁺
(mescaline)

CHART LXXXII



anion-1

(vanillin)



anion-4

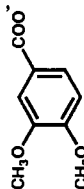
R = H

(salicylate)

anion-5

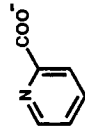
R = NH₂

(p-aminosalicylate)



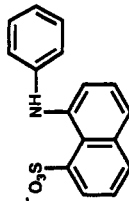
anion-2

(veratrate)

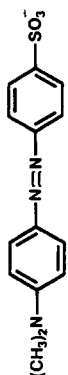


anion-6

(α-picolinate)

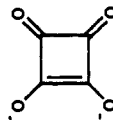


anion-7

(ANS = 8-antino-
naphthalene-1-sulfonate)

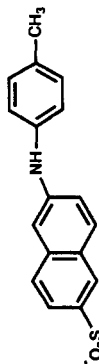
anion-8

(Methyl Orange)

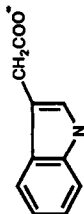


anion-9

(squarate)

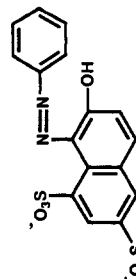


anion-11

(TNS = 6-p-
toluidyno-
naphthalene-2-sulfonate)

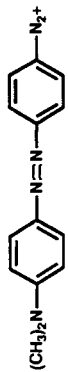
anion-10

(indolyl-3-acetate)

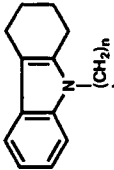


anion-13

(Orange G)



cation-4

(4'-dimethylaminoazo-
benzene-4-diazonium)

cation-6

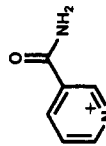
n = 2

cation-7

n = 3

cation-8

n = 4

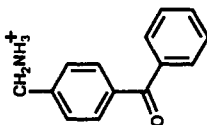


cation-9

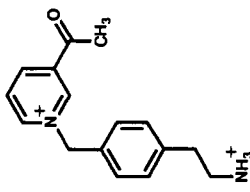
n = 2

cation-10

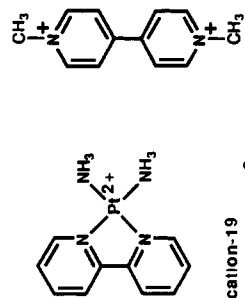
n = 4



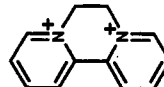
cation-14



cation-13



cation-19

[P(bipy)(NH₃)₂]²⁺

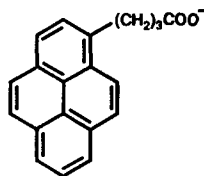
cation-18

(diquat²⁺)

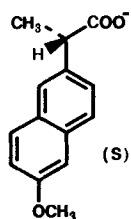
cation-20

(paraquat²⁺)

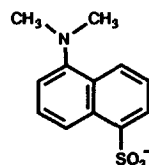
CHART LXXXIII



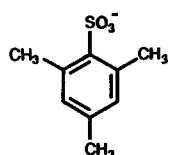
anion-14
(PB = pyrene-1-butylate)



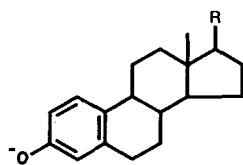
anion-15
[naproxen (S)⁻]



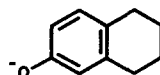
anion-16
(DNS = 5-dimethylamino-1-naphthalenesulfonate)



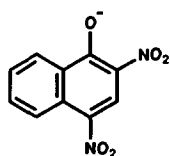
anion-17
(2,4,6-trimethylbenzenesulfonate)



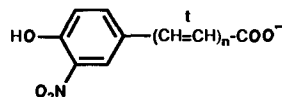
anion-18
R = β-OH, α-H
(β-estradiol⁻)



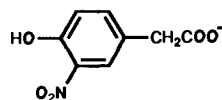
anion-19
(2-tetralol⁻)



anion-20
(DNNO = 2,4-dinitro-1-naphthoxide)



anion-21 n = 0
anion-22 n = 1
anion-23 n = 2
anion-24 n = 3



anion-25

Nomenclature for CHARTS I-LXXXIII

A = aza (nitrogen heteroatom), Ala = alanine, Anthra = anthracene, Arg = arginine, Asn = asparagine, Asp = aspartic acid, B = benzo, Bipy = bipyridine, Bzl(OMe) = p-methoxybenzyl, 9C3-1 = 9-crown-3, 18C6-1 = 18-crown-6, Calix = calixarene, Cat = catenand, Chrom = cyclotetrachromotropyline, Cy = cyclohexane, Cys = cysteine, Fur = furan, Gln = glutamine, Glu = glutamic acid, Gly = glycine, Guan = guanidine, His = histidine, Ile = isoleucine, K = keto, Leu = leucine, Lys = lysine, Met = methionine, Nap = naphthalene, Naphthyr = naphthylene, Phe = phenylalanine, Phen = phenanthroline, Phos = P=O, Phthal = phthalocyanine, Pro = proline, Py = pyridine, Quin = quinoline, Sar = sarcosine, Spher = spherand, Ser = serine, T = thia (sulfur heteroatom), THF = tetrahydrofuran, Thr = threonine, Thio = thiophene, TO = SO, TO₂ = SO₂, Trp = tryptophan, Tyr = tyrosine, Val = valine.

VII. Tables I-VI

TABLE I. Log *K*, ΔH , and ΔS Values for Cation-Macrocycle Interaction in Solution

ligand	cation	log <i>K</i> ^a	method ^b	ΔH , kJ/mol	ΔS , J/Kmol	<i>T</i> , °C	conditions ^c	ref	
CHART I									
A ₂ 8C2-1	H ⁺	11.4	Cal	-49.62	51.8	25	H ₂ O	44	
	Mg ²⁺	4.0	Cal	6.11	97.6	25	H ₂ O	44, 45	
	Ca ²⁺	5.0	Cal	-5.79	85.5	25	H ₂ O	44, 45	
	Sr ²⁺	none	Cal			25	H ₂ O	44, 45	
	Ba ²⁺	none	Cal			25	H ₂ O	44, 45	
	Co ²⁺	8.55	Pot			25	H ₂ O, 0.1 M NaClO ₄	46	
	Ni ²⁺	10.3	Pot			25	H ₂ O, 0.1 M NaClO ₄	46	
	Cu ²⁺	18.6	Spec			25	H ₂ O, 0.1 M NaClO ₄	46	
	Zn ²⁺	11.27	Pot			25	H ₂ O, 0.1 M NaClO ₄	46	
	A ₂ 8C2-2	H ⁺	12.5(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	47
H ⁺		4.82(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	47	
Co ²⁺		9.14	Pot			25	H ₂ O, 0.5 M KNO ₃	47	
Co ²⁺		9.09	Kin			25	H ₂ O, 0.5 M KNO ₃	47	
Ni ²⁺		10.90	Pot			25	H ₂ O, 0.5 M KNO ₃	47	
Ni ²⁺		10.79	Kin			25	H ₂ O, 0.5 M KNO ₃	47	
9C3-1	Ca ²⁺	nm	Cal	nm		25	MeOH	48	
	Sr ²⁺	nm	Cal	nm		25	MeOH	48	
	Ba ²⁺	<1(1:1?)	Cal	nm		25	MeOH	48	
	Ba ²⁺		Cal	-10.2		25	MeOH (sum of enthalpies)	48	
	Ba ²⁺	nm(1)	Cal	>-2		25	MeCN	48	
	Ba ²⁺		Cal	-14.6		25	MeCN (sum of enthalpies)	48	
	Ba ²⁺	nm(1)	Cal	>-2		25	PC	48	
	Ba ²⁺		Cal	-8.9		25	PC (sum of enthalpies)	48	
	A ₂ 9C3-1	H ⁺	9.59(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49
		H ⁺	5.32(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49
H ⁺		9.60(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
H ⁺		5.34(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Ni ²⁺		8.59(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Ni ²⁺		7.27(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Ni ²⁺		8.49(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Ni ²⁺		7.2(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Cu ²⁺		10.85(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Cu ²⁺		8.64(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Cu ²⁺		10.86(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Cu ²⁺		8.68(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Zn ²⁺		6.32(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Zn ²⁺		5.07(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	49	
Zn ²⁺		6.36(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Zn ²⁺		5.07(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Cd ²⁺		4.48(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Cd ²⁺		3.40(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
Pb ²⁺		5.17	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
A ₂ 9C3-2		H ⁺	10.8	Cal	-43.64	59.6	25	H ₂ O	44
	Mg ²⁺	5.2	Cal	23.84	179	25	H ₂ O	44, 45	
	Ca ²⁺	5.0	Cal	-11.30	58.8	25	H ₂ O	44, 45	
	Sr ²⁺	3.3	Cal	-3.88	50.2	25	H ₂ O	44, 45	
	Ba ²⁺	3.3	Cal	-3.27	53.0	25	H ₂ O	44, 45	
A ₃ 9C3-1	H ⁺	10.80(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	7.09(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	10.59(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	6.88(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	10.48(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	6.64(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	51, 52	
	H ⁺	(1)	Cal	-43.5	54.4	25	H ₂ O, 0.1 M KNO ₃	53	
	H ⁺	(2)	Cal	-41.4	-8.79	25	H ₂ O, 0.1 M KNO ₃	53	
	H ⁺	12.6(1)	NMR			25	H ₂ O, 0.5 M KNO ₃	54	
	H ⁺	7.24(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	54	
	H ⁺	10.68(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	H ⁺	6.86(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	H ⁺	2.1(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	H ⁺	10.94(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	56	
	H ⁺	7.24(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	56	
	H ⁺	<2(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	56	
	H ⁺	10.42(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	57	
	H ⁺	6.82(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	57	
	H ⁺	strong(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	57	
	H ⁺	11.03(1)	Pot			20	MeCN·H ₂ O, <i>I</i> = 0.2 (Na ₂ SO ₄)	58	
	H ⁺	7.37(2)	Pot			20	MeCN·H ₂ O, <i>I</i> = 0.2 (Na ₂ SO ₄)	58	
	H ⁺	0.7(3)	NMR			20	MeCN·H ₂ O, <i>I</i> = 0.2 (Na ₂ SO ₄)	58	
	Co ²⁺	11.2(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	Co ²⁺	7.8(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	Ni ²⁺	13.6(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	Ni ²⁺	11.8(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55	
	Ni ²⁺	14.2(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	59	
	Ni ²⁺	16.24	Pot			25	H ₂ O, 0.1 M KNO ₃	57	
	Cu ⁺	10.93	Pot			20	MeCN·H ₂ O, <i>I</i> = 0.2 (Na ₂ SO ₄)	58	
		CuL or Cu(MeCN)L					[(Cu(MeCN)] ⁺ + L)		
Cu ⁺	5.63	Pot			20	MeCN·H ₂ O, <i>I</i> = 0.2 (Na ₂ SO ₄)			
	Cu(MeCN)HL or Cu(MeCN) ₂ HL					[(Cu(MeCN) ₂] ⁺ + HL ⁺)	58		
Cu ²⁺	16.56	Polg			15	H ₂ O, 0.2 M NaClO ₄	51		
Cu ²⁺	16.23	Polg	-54.4	128	25	H ₂ O, 0.2 M NaClO ₄	51		
Cu ²⁺	15.92	Polg			35	H ₂ O, 0.2 M NaClO ₄	51		
Cu ²⁺		Cal	-59.4	97.9	25	H ₂ O, 0.1 M KNO ₃	53		
Cu ²⁺	15.1(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55, 60		
Cu ²⁺	12.1(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55, 60		
Cu ²⁺	15.6	Pot			25	H ₂ O, 0.1 M KNO ₃	61		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref
	Cu ²⁺	15.84(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	56
	Cu ²⁺	10.69(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	56
	Cu ²⁺	15.52	Pot			25	H ₂ O, 0.1 M KNO ₃	57
	Cu ²⁺	8.25	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CuLOH)					(CuL ²⁺ + OH ⁻)	57
	Cu ²⁺	15.7(1)	Spec			25	H ₂ O, 0.1 M KCl	60
	Cu ²⁺	11.8(2)	Spec			25	H ₂ O, 0.1 M KCl	60
	Cu ²⁺	17.50(1)	Spec			25	H ₂ O, 0.5 M KNO ₃	54
	Cu ²⁺	14.0(2)	Spec			25	H ₂ O, 0.5 M KNO ₃	54
	Cu ²⁺	15.04	Spec			25	H ₂ O, 0.5 M KNO ₃	
		(CuLOH) ₂					(2CuL ²⁺ + 2OH ⁻)	54
	Zn ²⁺		Cal	-49.8	55.2	25	H ₂ O, 0.1 M KNO ₃	53
	Zn ²⁺	11.4	Polg	-29.3	121	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	11.7(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55
	Zn ²⁺	10.0(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55
	Zn ²⁺	11.6	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Zn ²⁺	11.3	Pot	-30.5	113	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	11.62	Pot			25	H ₂ O, 0.1 M KNO ₃	57
	Cd ²⁺	9.5(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	55
	Cd ²⁺	8.4(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	55
	Cd ²⁺	9.2	Pot	-31.8	71.1	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	10.8	Pot	-34.3	113	25	H ₂ O, 0.2 M NaClO ₄	52
A ₃ 9C3-3	H ⁺	11.47(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	62
	H ⁺	7.45(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	62
	H ⁺	2.82(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	62
	Cu ²⁺	18.99(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	62
	Cu ²⁺	5.79(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	62
	Cu ²⁺	9.39(CuL)	Pot			25	H ₂ O, 0.5 M KNO ₃	
							(CuH ₁ L + H ⁺)	62
	Cu ²⁺	2.42	Pot			25	H ₂ O, 0.5 M KNO ₃	
		(Cu ₂ H ₁ L ₂)					(CuL + CuH ₁ L)	62
A ₃ 9C3-4	H ⁺	11.3(1)	NMR			25	D ₂ O, 0.1 M NaClO ₄	63
	H ⁺	5.59(2)	Pot			25	D ₂ O, 0.1 M NaClO ₄	63
	H ⁺	2.88(3)	Pot			25	D ₂ O, 0.1 M NaClO ₄	63
	H ⁺	11.41(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
	H ⁺	5.74(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
	H ⁺	3.16(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
	H ⁺	1.71(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
	Mg ²⁺	8.93	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
	Ca ²⁺	8.81	Pot			25	H ₂ O, 0.1 M NaNO ₃	64
A ₃ 9C3-5	H ⁺	11.092(1)	Pot			15	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	6.115(2)	Pot			15	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	3.122(3)	Pot			15	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	1.893(4)	Pot			15	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65
	H ⁺	10.773(1)	Pot			25	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	6.035(2)	Pot			25	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	3.163(3)	Pot			25	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	1.955(4)	Pot			25	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65
	H ⁺	10.535(1)	Pot			35	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	5.926(2)	Pot			35	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	3.185(3)	Pot			35	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	2.015(4)	Pot			35	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65
	H ⁺	10.192(1)	Pot			45	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	5.832(2)	Pot			45	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	3.208(3)	Pot			45	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	2.052(4)	Pot			45	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65
	H ⁺	10.115(1)	Pot			55	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	5.765(2)	Pot			55	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	3.245(3)	Pot			55	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	1.978(4)	Pot			55	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65
	H ⁺	(1)	Pot	-46.0	51.9	15-55	H ₂ O, 1.0 M NaClO ₄	
							(L ³⁻ + H ⁺)	65
	H ⁺	(2)	Pot	-16.3	60.7	15-55	H ₂ O, 1.0 M NaClO ₄	
							(HL ²⁻ + H ⁺)	65
	H ⁺	(3)	Pot	-5.4	78.2	15-55	H ₂ O, 1.0 M NaClO ₄	
							(H ₂ L ⁻ + H ⁺)	65
	H ⁺	(4)	Pot	5.0	54.0	15-55	H ₂ O, 1.0 M NaClO ₄	
							(H ₃ L + H ⁺)	65

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	11.878(1)	Pot			15	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	5.762(2)	Pot			15	H ₂ O, 0.1 M NaNO ₃ HL ²⁻ + H ⁺	65
	H ⁺	3.081(3)	Pot			15	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	H ⁺	11.730(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	4.742(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃ (HL ²⁻ + H ⁺)	65
	H ⁺	3.160(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	H ⁺	11.581(1)	Pot			35	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	5.671(2)	Pot			35	H ₂ O, 0.1 M NaNO ₃ (HL ²⁻ + H ⁺)	65
	H ⁺	3.165(3)	Pot			35	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	H ⁺	11.184(1)	Pot			45	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	5.627(2)	Pot			45	H ₂ O, 0.1 M NaNO ₃ (HL ²⁻ + H ⁺)	65
	H ⁺	3.198(3)	Pot			45	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	H ⁺	10.859(1)	Pot			55	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	5.578(2)	Pot			55	H ₂ O, 0.1 M NaNO ₃ (HL ²⁻ + H ⁺)	65
	H ⁺	3.229(3)	Pot			55	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	H ⁺	(1)	Pot	-46.4	68.2	15-55	H ₂ O, 0.1 M NaNO ₃ (L ³⁻ + H ⁺)	65
	H ⁺	(2)	Pot	-8.8	80.3	15-55	H ₂ O, 0.1 M NaNO ₃ (HL ²⁻ + H ⁺)	65
	H ⁺	(3)	Pot	-5.9	80.3	15-55	H ₂ O, 0.1 M NaNO ₃ (H ₂ L ⁻ + H ⁺)	65
	Mg ²⁺	9.69	Pot			25	H ₂ O, 0.1 M NaNO ₃ (Mg ²⁺ + L ³⁻)	65
	Mg ²⁺	9.66	Pot			35	H ₂ O, 0.1 M NaNO ₃ (Mg ²⁺ + L ³⁻)	65
	Mg ²⁺	9.64	Pot			45	H ₂ O, 0.1 M NaNO ₃ (Mg ²⁺ + L ³⁻)	65
	Mg ²⁺	9.73	Pot			55	H ₂ O, 0.1 M NaNO ₃ (Mg ²⁺ + L ³⁻)	65
	Mg ²⁺		Pot	1.7	188	25-55	H ₂ O, 0.1 M NaNO ₃ (Mg ²⁺ + L ³⁻)	65
	Ca ²⁺	9.01	Pot			15	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Ca ²⁺	8.92	Pot			25	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Ca ²⁺	8.74	Pot			35	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Ca ²⁺	8.61	Pot			45	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Ca ²⁺	8.49	Pot			55	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Ca ²⁺		Pot	-24.7	88	15-55	H ₂ O, 0.1 M NaNO ₃ (Ca ²⁺ + L ³⁻)	65
	Sr ²⁺	6.88	Pot			15	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Sr ²⁺	6.83	Pot			25	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Sr ²⁺	6.76	Pot			35	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Sr ²⁺	6.75	Pot			45	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Sr ²⁺	6.68	Pot			55	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Sr ²⁺		Pot	-8.8	100	15-55	H ₂ O, 0.1 M NaNO ₃ (Sr ²⁺ + L ³⁻)	65
	Ba ²⁺	5.12	Pot			15	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	Ba ²⁺	5.10	Pot			25	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	Ba ²⁺	5.06	Pot			35	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	Ba ²⁺	5.02	Pot			45	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	Ba ²⁺	5.00	Pot			55	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	Ba ²⁺		Pot	-5.77	77.8	15-55	H ₂ O, 0.1 M NaNO ₃ (Ba ²⁺ + L ³⁻)	65
	La ³⁺	13.52	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Ce ³⁺	3.2 (CuHL)	Kin			25	H ₂ O, 0.1 M NaCl pH 4.85-5.83	67
	Ce ³⁺	13.23	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Pr ³⁺	13.28	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Nd ³⁺	13.13	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Sm ³⁺	13.40	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Eu ³⁺	13.86	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Gd ³⁺	3.6 (GdHL)	Kin			25	H ₂ O, 0.1 M NaCl pH 4.85-5.83	67
	Gd ³⁺	14.27	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Tb ³⁺	14.50	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Dy ³⁺	15.11	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Ho ³⁺	15.21	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Er ³⁺	3.8 (ErHL)	Kin			25	H ₂ O, 0.1 M NaCl pH 4.85-5.83	67
	Er ³⁺	15.23	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Tm ³⁺	15.35	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Yb ³⁺	15.35	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Lu ³⁺	15.95	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Mn ²⁺	14.9	NMR			25	H ₂ O, 0.1 M Me ₄ NCl	68
	Mn ²⁺	14.3	Polg			25	H ₂ O, 0.1 M KNO ₃	69
	Co ²⁺	17.5,17.7						
			Polg			25	H ₂ O, 0.1 M KNO ₃	69
	Cu ²⁺	19.8	Polg			25	H ₂ O, 0.1 M KNO ₃	69
	Cu ²⁺	21.97	Pot			15	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺	21.63	Pot			25	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺	21.30	Pot			35	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺	21.02	Pot			45	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺	20.73	Pot			55	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺		Pot	-56.1	226	15-55	H ₂ O, 0.1 M NaNO ₃ (Cu ²⁺ + L ³⁺)	65
	Cu ²⁺	13.608 (CuHL)	Spec			15	H ₂ O, 0.1 M NaNO ₃	65
	Cu ²⁺	13.597 (CuHL)	Spec			25	H ₂ O, 1.0 M NaClO ₄	65
	Cu ²⁺	13.505 (CuHL)	Spec			35	H ₂ O, 1.0 M NaClO ₄	65
	Cu ²⁺	13.568 (CuHL)	Spec			45	H ₂ O, 1.0 M NaClO ₄	65
	Cu ²⁺	13.355 (CuHL)	Spec			55	H ₂ O, 1.0 M NaClO ₄	65
	Cu ²⁺	13.355 (CuHL)	Spec	-10.5	226	15-55	H ₂ O, 1.0 M NaClO ₄	65
	Zn ²⁺	18.3	Polg			25	H ₂ O, 0.1 M KNO ₃	69
	Cd ²⁺	16.0	Polg			25	H ₂ O, 0.1 M KNO ₃	69
	Pb ²⁺	16.6	Polg			25	H ₂ O, 0.1 M KNO ₃	69
A ₃ 9C3-6	H ⁺	11.7(1)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	9.1(2)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	7.5(3)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	5.8(4)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	3.1(5)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	0.9(6)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	12.1(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	9.4(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	7.5(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	5.9(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	2.9(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
A ₃ 9C3-7	H ⁺	11.79(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	H ⁺	8.65(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	H ⁺	7.09(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	H ⁺	5.38(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	H ⁺	2.53(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	H ⁺	<2(6)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Be ²⁺	11.5(BeHL)						
	Be ²⁺	9.3(BeH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Be ²⁺	7.3(BeH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Be ²⁺	2.0 (BeHLOH)	Pot			25	H ₂ O, 1.0 M KNO ₃ (BeHL ³⁺ + OH ⁻)	71
	Mg ²⁺	11.01	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Mg ²⁺	5.44(MgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Mg ²⁺	0.55 (Mg ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Mg ²⁺ + MgL ²⁺)	73
	Mg ²⁺	11.6 (Mg ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (2Mg ²⁺ + L)	73
	Ca ²⁺	6.38	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Ca ²⁺	2.67(CaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Sr ²⁺	5.34	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Sr ²⁺	2.40(SrHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Ba ²⁺	4.37	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	Ba ²⁺	2.16(BaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71, 72
	La ³⁺	14.3	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	La ³⁺	10.2(LaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	La ³⁺	8.0(LaH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	La ³⁺	5.6(LaH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Mn ²⁺	16.6	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Mn ²⁺	10.8(MnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Mn ²⁺	7.3(MnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Mn ²⁺	4.4(MnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Fe ³⁺	29.6	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Fe ³⁺	9.0 (FeLOH)	Pot			25	H ₂ O, 1.0 M KNO ₃ (FeL ³⁺ + OH ⁻)	71
	Co ²⁺	19.7	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Co ²⁺	13.9(CoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Co ²⁺	10.4(CoH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Co ²⁺	7.7(CoH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Co ²⁺	3.40 (Co ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Co ²⁺ + CoL ²⁺)	73
	Co ²⁺	23.1 (Co ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (2Co ²⁺ + L)	73
	Co ²⁺	2.51 (Co ₂ HL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Co ²⁺ + CoHL ³⁺)	73
	Co ²⁺	16.4 (Co ₂ HL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (2Co ²⁺ + HL ⁺)	73
	Co ²⁺ , Ni ²⁺	3.34 (CoNiL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + CoL ²⁺)	73
	Co ²⁺ , Ni ²⁺	23.0 (CoNiL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + Co ²⁺ + L)	73
	Co ²⁺ , Ni ²⁺	2.49 (CoNiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + CoHL ³⁺)	73
	Co ²⁺ , Ni ²⁺	16.4 (CoNiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + Co ²⁺ + HL ⁺)	73
	Ni ²⁺	19.4	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Ni ²⁺	13.8(NiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Ni ²⁺	10.4(NiH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Ni ²⁺	8.0(NiH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cu ²⁺	21.3	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cu ²⁺	16.4(CuHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cu ²⁺	12.1(CuH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cu ²⁺	8.6(CuH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cu ²⁺	5.12 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuL ²⁺)	73
	Cu ²⁺	26.4 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + L)	73
	Cu ²⁺	2.72 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuHL ³⁺)	73
	Cu ²⁺	19.1 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Be ²⁺	7.4 (CuBeL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Be ²⁺	28.7 (CuBeL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Be ²⁺	5.7 (CuBeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Be ²⁺	22.1 (CuBeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Mn ²⁺	3.31 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Mn ²⁺	24.6 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Mn ²⁺	1.95 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Mn ²⁺	18.4 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Co ²⁺	3.26 (CuCoL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Co ²⁺	24.6 (CuCoL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Co ²⁺	1.90 (CuCoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Co ²⁺	18.3 (CuCoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Ni ²⁺	3.21 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Ni ²⁺	24.5 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Ni ²⁺	1.85 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Ni ²⁺	18.3 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + HL ⁺)	73

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Zn ²⁺	24.9	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Zn ²⁺	18.3(ZnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Zn ²⁺	14.1(ZnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Zn ²⁺	7.7 (ZnLOH)	Pot			25	H ₂ O, 1.0 M KNO ₃ (ZnL ²⁺ + OH ⁻)	71
	Cd ²⁺	19.7	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cd ²⁺	13.9(CdHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cd ²⁺	10.2(CdH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Cd ²⁺	7.3(CdH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Hg ²⁺	23.0	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Hg ²⁺	17.2(HgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Hg ²⁺	13.4(HgH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Pb ²⁺	22.1	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Pb ²⁺	15.6(PbHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Pb ²⁺	11.9(PbH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	71
	Pb ²⁺	7.2 (PbLOH)	Pot			25	H ₂ O, 1.0 M KNO ₃ (PbL ²⁺ + OH ⁻)	71
A ₃ 9C3-8	H ⁺	12.6(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	74
	H ⁺	12.3(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	H ⁺	8.85(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 75
	H ⁺	6.97(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 75
	H ⁺	6.21(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 75
	H ⁺	5.38(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 75
	H ⁺	<2 (6)	Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Be ²⁺	13.4	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Be ²⁺	9.4(BeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Be ²⁺	7.7(BeH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Be ²⁺	7.1(BeH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mg ²⁺	6.10	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mg ²⁺	2.90(MgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Ca ²⁺	<2	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Sr ²⁺	<1	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Ba ²⁺	<1	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mn ²⁺	12.77	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mn ²⁺	8.26(MnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mn ²⁺	5.90(MnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Mn ²⁺	4.21(MnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Co ²⁺	13.38	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Co ²⁺	9.38(CoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Co ²⁺	7.60(CoH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Co ²⁺	6.50(CoH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Ni ²⁺	9.20	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Ni ²⁺	5.69(NiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Ni ²⁺	4.10(NiH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cu ²⁺	21.3	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cu ²⁺	16.2(CuHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cu ²⁺	13.7(CuH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cu ²⁺	11.5(CuH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Zn ²⁺	17.0	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Zn ²⁺	12.9(ZnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Zn ²⁺	11.1(ZnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Zn ²⁺	9.9(ZnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cd ²⁺	15.83	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cd ²⁺	11.00(CdHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cd ²⁺	8.43(CdH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
	Cd ²⁺	6.71(CdH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	75
A ₃ 9C3-9	Li ⁺	5.6	Cond			25	THF·CHCl ₃ (4:1), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	76
	Na ⁺	4.5	Cond			25	THF·CHCl ₃ (4:1), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	76
	K ⁺	3.2	Cond			25	THF·CHCl ₃ (4:1), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	76
	Cs ⁺	2.2	Cond			25	THF·CHCl ₃ (4:1), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	76
	MgI ⁺	2.8	Cond			25	MeCN·CHCl ₃ (1:1), (anion = I ⁻)	77
	MgI ⁺	2.9	Cond			25	THF·CHCl ₃ (1:1), (anion = I ⁻)	77
	CaI ⁺	2.4	Cond			25	MeCN·CHCl ₃ (1:1), (anion = I ⁻)	77
	CaI ⁺	3.2	Cond			25	THF·CHCl ₃ (1:1), (anion = I ⁻)	77
	Co ²⁺	4.67	Spec			25?	Me ₂ CO·CHCl ₃ (1:1/v:v), (anion = SCN ⁻)	78
	Co ²⁺	2.61 (Co ₂ L)	Spec			25?	Me ₂ CO·CHCl ₃ (1:1/v:v), (anion = SCN ⁻)	78
A ₃ 9C3-10	H ⁺	11.52(1)	Spec			25	H ₂ O, 0.1 M NaNO ₃	79
	H ⁺	3.42(2)	Spec			25	H ₂ O, 0.1 M NaNO ₃	79
	Cu ²⁺	15.50	Spec			25	H ₂ O, 0.1 M NaNO ₃	79
	Zn ²⁺	12.07	Spec			25	H ₂ O, 0.1 M NaNO ₃	79
A ₃ 9C3-11	H ⁺	10.30(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	H ⁺	7.39(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	H ⁺	3.25(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	Li ⁺	3.91	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	Na ⁺	4.22	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
A ₃ 9C3-12	H ⁺	12.3(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	H ⁺	8.85(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	11

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	H ⁺	6.97(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	H ⁺	6.21(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	H ⁺	5.38(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	H ⁺	<2(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Be ²⁺	13.40	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Mg ²⁺	6.10	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Ca ²⁺	<2	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Sr ²⁺	<1	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Ba ²⁺	<1	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Mn ²⁺	12.77	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Co ²⁺	13.38	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Ni ²⁺	9.20	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Cu ²⁺	21.30	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Zn ²⁺	17.00	Pot			25	H ₂ O, 0.1 M KNO ₃	11
	Cd ²⁺	15.83	Pot			25	H ₂ O, 0.1 M KNO ₃	11
A ₂ T9C3-1	H ⁺	9.67(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	H ⁺	3.98(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Fe ²⁺	5.9(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Fe ²⁺	6.1(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Co ²⁺	7.85	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Ni ²⁺	10.82(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Ni ²⁺	9.95(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Ni ²⁺	10.45(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Ni ²⁺	9.60(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Cu ²⁺	12.42(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Cu ²⁺	9.87(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81
	Zn ²⁺	7.31(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Zn ²⁺	5.84(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Cd ²⁺	6.65(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	Cd ²⁺	5.81(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
A ₂ 10C3-1	Pb ²⁺	6.76	Pot			25	H ₂ O, 0.1 M NaNO ₃	81a
	H ⁺	9.56(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	H ⁺	8.53(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Cu ²⁺	8.55(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Cu ²⁺	6.41(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Ni ²⁺	5.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Zn ²⁺	4.94	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Cd ²⁺	4.06	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
A ₂ 10C3-2	H ⁺	11.5	Cal	-53.01	42.4	25	H ₂ O	44
	Mg ²⁺	3.8	Cal	13.26	118	25	H ₂ O	44, 45
	Ca ²⁺	3.4	Cal	-3.34	53.6	25	H ₂ O	44, 45
	Sr ²⁺	none	Cal			25	H ₂ O	44, 45
	Ba ²⁺	none	Cal			25	H ₂ O	44, 45
A ₃ 10C3-1	H ⁺	11.15(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	6.95(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	10.85(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	6.76(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	10.55(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	6.57(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	52
	H ⁺	12.75(1)	NMR			25	H ₂ O, 0.5 M KNO ₃	83
	H ⁺	6.86(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	83
	H ⁺	12.02(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	6.59(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	strong(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	13.2(1)	Pot			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	6.96(2)	Pot			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	0.1(3)	NMR			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	Ni ²⁺	14.58	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ⁺	10.85	Pot			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	
	Cu ⁺	Cu(MeCN)L					([Cu(MeCN)] ⁺ + L)	58
	Cu ⁺	2.80	Pot			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	
	Cu ⁺	Cu(MeCN) ₂ HL					([Cu(MeCN) ₂] ⁺ + HL ⁺)	58
	Cu ²⁺	15.5	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Cu ²⁺	14.4	Pot	-62.3	66.9	25	H ₂ O, 0.2 M NaClO ₄	52
	Cu ²⁺	15.48	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ²⁺	16.14(1)	Spec			25	H ₂ O, 0.5 M KNO ₃	83
	Cu ²⁺	10.26(2)	Spec			25	H ₂ O, 0.5 M KNO ₃	83
	Cu ²⁺	14.52	Spec			25	H ₂ O, 0.5 M KNO ₃	
		(CuLOH) ₂					(2CuL ²⁺ + 2OH ⁻)	83
	Zn ²⁺	11.2	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Zn ²⁺	10.3	Pot	-28.0	105	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	11.28	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cd ²⁺	7.8	Pot	-30.5	46.0	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	8.8	Pot	-30.5	66.9	25	H ₂ O, 0.2 M NaClO ₄	52
A ₃ 10C3-2	Cu ²⁺	16.194(1)	Spec			25	H ₂ O, $I = 0.5$	85
	Cu ²⁺	10.303(2)	Spec			25	H ₂ O, $I = 0.5$	85
A ₃ 11C3-1	H ⁺	13.2(1)	NMR			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	6.94(2)	Pot			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	-0.4(3)	NMR			20	MeCN-H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	Cu ²⁺	0.70	Kin			7	H ₂ O, $I = 1.0$ (NaNO ₃) + 0.025-0.5 M HNO ₃)	85a

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Cu ⁺	9.05	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)L					(Cu(MeCN) ₂ + HL ⁺)	58
	Cu ⁺	2.55	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN) ₂ HL					(Cu(MeCN) ₂ + HL ⁺)	58
A ₃ 11C3-2	H ⁺	11.96(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	7.61(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	strong(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	12.8(1)	NMR			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	8.03(2)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	0.2(3)	NMR			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	Ni ²⁺	12.88	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ²⁺	14.4	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Cu ²⁺	14.44	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ⁺	10.33	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)L					([Cu(MeCN)] ⁺ + L)	58
	Cu ⁺	4.50	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)HL or Cu(MeCN) ₂ HL					([Cu(MeCN) ₂] ⁺ + HL ⁺)	58
	Zn ²⁺	10.4	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Zn ²⁺	10.41	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Zn ²⁺	16.01	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(ZnLOH)					(Zn ²⁺ + L + OH ⁻)	84
11C4-1	Li ⁺	1.8	Spec			25	Diox·H ₂ O (6:4/v:v), (anion = Cl ⁻)	86
K12C3-1	Li ⁺	3.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	Na ⁺	4.20	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	K ⁺	2.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	Rb ⁺	3.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	NH ₄ ⁺	3.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	CH ₃ NH ₃ ⁺	3.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
(1,3-B)12C3-1	H ⁺	7.6	Spec			25	Diox·H ₂ O (1:9)	88
K ₂ Py12C3-1	Eu ³⁺ ,3Fod ⁻	2.69	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
K ₂ Py12C3-2	Eu ³⁺ ,3Fod ⁻	2.72	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
A ₃ 12C3-1	H ⁺	11.5(1)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	8.95(2)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	0.2(3)	NMR			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	Cu ⁺	9.29	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)L					Cu(MeCN) ⁺ + L)	58
	Cu ⁺	4.45	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)HL					Cu(MeCN) ⁺ + HL ⁺)	58
	Cu ²⁺	1.61	Kin			25	H ₂ O, I = 1.0 (NaNO ₃ + 0.025-0.5 M HNO ₃)	85a
A ₃ 12C3-2	Zn ²⁺	7.01	Pot			25	H ₂ O, 0.1 M NaClO ₄	90
	H ⁺	12.60(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	7.57(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	2.41(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	H ⁺	12.7(1)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	7.99(2)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	3.30(3)	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	3.2(3)	NMR			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	Ni ²⁺	10.93	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ²⁺	12.6	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Cu ²⁺	12.63	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Cu ²⁺	18.27	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CuLOH)					(Cu ²⁺ + L + OH ⁻)	84
	Cu ⁺	8.46	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN)L					([Cu(MeCN)] ⁺ + L)	58
	Cu ⁺	2.78	Pot			20	MeCN·H ₂ O, I = 0.2 (Na ₂ SO ₄)	
		Cu(MeCN) ₂ HL					([Cu(MeCN) ₂] ⁺ + HL ⁺)	58
	Zn ²⁺	8.8	Pot			25	H ₂ O, 0.1 M KNO ₃	61
	Zn ²⁺	8.75	Pot			25	H ₂ O, 0.1 M KNO ₃	84
	Zn ²⁺	15.04	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(Zn ²⁺ + L + OH ⁻)						84
A ₃ 12C3-3	Zn ²⁺	8.41	Pot			25	H ₂ O, 0.1 M NaClO ₄	90
	H ⁺	12.3(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	91
	H ⁺	7.34(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	91
	H ⁺	2.51(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	91
	Ni ²⁺	-9.81	Pot			25	H ₂ O, 0.1 M NaNO ₃	
		(NiLOH)					(NiL ²⁺ → NiLOH ⁺ + H ⁺)	91
	Ni ²⁺	2.44	Pot			25	H ₂ O, 0.1 M NaNO ₃	
		(Ni ₂ (OH) ₂ L ₂)					[NiLOH ⁺ → Ni ₂ L ₂ (OH) ₂ ²⁺]	91
	Cu ²⁺	11.58	Pot			25	H ₂ O, 0.1 M NaNO ₃	91
	Cu ²⁺	-8.48	Pot			25	H ₂ O, 0.1 M NaNO ₃	
		(CuLOH)					(CuL ²⁺ → CuLOH ⁺ + H ⁺)	91
	Cu ²⁺	-11.9	Pot			25	H ₂ O, 0.1 M NaNO ₃	
		(Cu(OH) ₂ L)					[CuLOH ⁺ → CuL(OH) ₂ + H ⁺]	91
	Cu ²⁺	2.00	Pot			25	H ₂ O, 0.1 M NaNO ₃	
		(Cu ₂ (OH) ₂ L ₂)					[CuLOH ⁺ → Cu ₂ L ₂ (OH) ₂ ²⁺]	91
	Zn ²⁺	7.68	Pot			25	H ₂ O, 0.1 M NaNO ₃	91

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
A ₃ 12C3-4	Zn ²⁺	-9.56 (ZnLOH)	Pot			25	H ₂ O, 0.1 M NaNO ₃ (ZnL ·> ZnLOH ⁺ + H ⁺)	91	
	H ⁺	13.0(1) (L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₁ L)	92	
	H ⁺	9.67(2) (HL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + L)	92	
	H ⁺	7.09(3) (H ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + HL)	92	
	H ⁺	2.0(4) (H ₃ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₂ L)	92	
	Co ²⁺	11.4 (CoH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Co ²⁺ + H ₁ L)	92	
	Co ²⁺	-1.65 (CoH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Co ²⁺ + L)	92	
	Ni ²⁺	14.0 (NiH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + H ₁ L)	92	
	Ni ²⁺	0.98 (NiH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + L)	92	
	Zn ²⁺	12.6 (ZnH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + H ₁ L)	92	
	Zn ²⁺	-0.42 (ZnH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	92	
	Cu ²⁺	18.4 (CuH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₁ L)	92	
	Cu ²⁺	5.38 (CuH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + L)	92	
	A ₃ 12C3-5	H ⁺	12.8(1)	Spec			25	H ₂ O, 0.1 M Me ₄ NCl	68
H ⁺		7.55(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
H ⁺		3.65(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
H ⁺		2.1(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
Mg ²⁺		7.1	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
Ca ²⁺		6.0	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
Mn ²⁺		12.8	NMR			25	H ₂ O, 0.1 M Me ₄ NCl	68	
Zn ²⁺		19.0	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
Cd ²⁺		15.7	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	68	
A ₃ 12C3-6		H ⁺	>13(1)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	10.4(2)	Pot			25	H ₂ O, 0.1 M NaCl	70	
	H ⁺	7.3(3)	Pot			25	H ₂ O, 0.1 M NaCl	70	
	H ⁺	5.8(4)	Pot			25	H ₂ O, 0.1 M NaCl	70	
	H ⁺	4.6(5)	Pot			25	H ₂ O, 0.1 M NaCl	70	
	H ⁺	1.7(6)	Pot			25	H ₂ O, 0.1 M NaCl	70	
	H ⁺	>13(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	H ⁺	10.4(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	H ⁺	7.4(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	H ⁺	6.0(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	H ⁺	4.9(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	H ⁺	1.9(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70	
	A ₃ 12C3-7	H ⁺	10.30(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
		H ⁺	6.10(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
A ₃ 12C3-8	H ⁺	11.20(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80	
	H ⁺	7.15(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80	
	Li ⁺	4.21	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80	
	Na ⁺	4.02	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80	
CHART II									
12C4-1	H ⁺	2.54	Cal	-21.0	-22.1	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
	H ⁺	2.10(HL ₂)	Cal	-22.0	-33.9	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
	Li ⁺	none	IEM			25	H ₂ O (anion = Cl ⁻)	94	
	Li ⁺	-0.10	NMR			30	H ₂ O (anion = Cl ⁻)	95	
	Li ⁺	1.94	Spin-relaxometry			25	4-Butyrolactone (anion = ClO ₄ ⁻)	96	
	Li ⁺ ,AsF ₆ ⁻	0.54	Kin			25	DME	97	
	Li ⁺	3.28	Kin			25	1,3-Dioxolane (anion = ClO ₄ ⁻)	98	
	Li ⁺	1.87	NMR			40?	1 mol% LiCl in 45 mol% AlCl ₃ melt	41	
	Li ⁺	-0.57	NMR			30	MeOD	99	
	Li ⁺	<0.0	Cond			25	MeOH (anion = Cl ⁻)	100	
	Li ⁺	2.73(1+2)	Cond	0(Cal)	52	25	MeOH	101	
	Li ⁺	2.23	Spin-relaxometry			25	PC (anion = ClO ₄ ⁻)	96	
	Li ⁺	1.0	Spin-relaxometry			25	THF (anion = ClO ₄ ⁻)	96	
	Na ⁺	0.60(1)	NMR			40	DOH (anion = I ⁻), [L] = 1.0 M	102	
	Na ⁺	0.82(2)	NMR			40	DOH (anion = I ⁻), [L] = 1.0 M	102	
	Na ⁺ (1+2)	0.24	NMR			40	DOH (anion = I ⁻), [L] = 2.0 M	102	
	Na ⁺	none	IEM			25	H ₂ O (anion = Cl ⁻)	94	
	Na ⁺	<-0.70(1+2)	Ebulliometry			boiling	0.6 molal t-BuOK·t-BuOH	103	
	Na ⁺	0.62(1+2)	Ebulliometry			boiling	0.6 molal EtOK·EtOH	103	
	Na ⁺	<-0.70(1+2)	Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103	
	Na ⁺	(1)	Cal	-12.6	-14.0	25	MeOH	104	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_i , kJ/mol	ΔS_i , J/K·mol	T , °C	conditions ^c	ref
	Na ⁺	(2)	Cal	-28.0	-50.5	25	MeOH	104
	Na ⁺	3.64(1+2)						
			Cond			25	MeOH	101
	Na ⁺	2.05(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	Na ⁺	1.73(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	Na ⁺	1.75(1)	ISE	-8.4(Cal)	5.0	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	Na ⁺	2.00(2)	ISE	-31.5	-69.4	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	Na ⁺	1.2	ISE			25	MeOH	105
	Na ⁺	2.1(1)	Spec			30	MeOH	106
	Na ⁺	1.7(2)	Spec			30	MeOH	106
	Na ⁺	0.90(1+2)						
			Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	Na ⁺	0.87(1+2)						
			Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	103
	Na ⁺	1.43(1+2)						
			Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	K ⁺	0.95	NMR			30	DOH (anion = I ⁻), [L] = 1.0 M	102
	K ⁺	0.60	NMR			40	DOH (anion = I ⁻), [L] = 1.0 M	102
	K ⁺	0.23	NMR			50	DOH (anion = I ⁻), [L] = 1.0 M	102
	K ⁺	0.39(1+2)	NMR			40	DOH (anion = I ⁻), [L] = 2.0 M	102
	K ⁺	none	IEM			25	H ₂ O (anion = Cl ⁻)	94
	K ⁺	-0.10(1+2)						
			Ebulliometry			boiling	0.6 molal <i>t</i> -BuOK· <i>t</i> -BuOH	103
	K ⁺	0.04(1+2)						
			Ebulliometry			boiling	0.6 molal EtOK·EtOH	103
	K ⁺	<-0.70(1+2)						
			Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103
	K ⁺	2.40(1)	ISE	-9.5(Cal)	13.8	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.29(2)	ISE	-14.5(Cal)	-5.03	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺		Cal	-21.3	-41.3	25	MeOH	104
	K ⁺	3.09(1+2)						
			Cond			25	MeOH	101
	K ⁺	1.73(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	0.86(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	1.55(1)	ISE	-13.5(Cal)	15.8	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	K ⁺	1.35(2)	ISE	-7.7	-27.9	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	K ⁺	1.3	ISE			25	MeOH	105
	K ⁺	1.7(1)	Spec			30	MeOH	106
	K ⁺	0.7(2)	Spec			30	MeOH	106
	K ⁺	0.04(1+2)						
			Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	K ⁺	2.02(1)	ISE	-14.6(Cal)	-10.4	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.65(2)	ISE	-8.7(Cal)	21.5	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	0(1+2)	Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	103
	K ⁺	0.48(1+2)						
			Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	Rb ⁺	(1)	Cal	-9.9		25	MeOH	101
	Rb ⁺	3.03	Cond	-14.7(Cal)	8.4	25	MeOH	101
		(1+2)						
	Rb ⁺	1.65(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	Rb ⁺	0.87(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	Cs ⁺	(1)	Cal	-9.1		25	MeOH	101
	Cs ⁺	2.94(1+2)						
			Cond	-15.0(Cal)	5.7	25	MeOH	101
	Cs ⁺	1.60(1)	Cond			25	MeOH (anion = Cl ⁻), 0.796 mM CsCl	100
	Cs ⁺	0.74(2)	Cond			25	MeOH (anion = Cl ⁻), 0.796 mM CsCl	100
	Cs ⁺	1.65(1)	Cond			25	MeOH (anion = Cl ⁻), 1.001 mM CsCl	100
	Cs ⁺	0.90(2)	Cond			25	MeOH (anion = Cl ⁻), 1.001 mM CsCl	100
	Mg ²⁺	0.21(1)	NMR			30	DOH (anion = Cl ⁻)	95
	Mg ²⁺	0.11(2)	NMR			30	DOH (anion = Cl ⁻)	95
	Mg ²⁺	1.41(1+2)	NMR			30	DOH	99
	Mg ²⁺	1.29	NMR			30	DOH (anion = Cl ⁻), [L] = 1.0 M	102
		(1+2)						
	Ca ²⁺	0.20(1)	NMR			30	DOH (anion = Cl ⁻)	95
	Ca ²⁺	0.11(2)	NMR			30	DOH (anion = Cl ⁻)	95
	Ca ²⁺	0.77(1+2)	NMR			30	DOH	99
	Ca ²⁺	0.94(1+2)	NMR			30	DOH (anion = Cl ⁻), [L] = 1.0 M	102
	Ca ²⁺	none	IEM			25	H ₂ O (anion = Cl ⁻)	94
	Ca ²⁺	1.85	Cal	-28.1	-58.8	25	EtOH (anion = Cl ⁻)	108
	Ca ²⁺	1.16	Cal	-21.1	-48	25	EtOH (anion = NO ₃ ⁻)	108
	Ca ²⁺	2.53(1)	Cal	-2.3	40.6	25	MeOH	101
	Ca ²⁺	(2)	Cal	-4.3		25	MeOH	101
	Sr ²⁺	2.50(1)	Cal	-12.4	6.0	25	MeOH	101

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Sr ²⁺	(2)	Cal	-2.6		25	MeOH	101
	Ba ²⁺	4.12(1)	Cal	-42.5	268	25	MeCN	48
	Ba ²⁺		Cal	-59.5		25	MeCN (sum of enthalpies)	48
	Ba ²⁺	2.38(2)	Cal		110	25	MeOH	48
	Ba ²⁺	2.56(1)	Cal	-21.4	-23.2	25	MeOH	101
	Ba ²⁺	<2(2)	Pot	-5.9(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101,109(log K_2)
	Ba ²⁺	3.93(1)	Cal	-39.5	241	25	PC	48
	Ba ²⁺		Cal	-63.2		25	PC (sum of enthalpies)	48
	La ³⁺	>7	NMR			25?	MeCN (anion = CF ₃ CO ₂ ⁻)	110
	La ³⁺	4.98	Calc'd			25?	PC (anhydrous)	111
	Pr ³⁺ ,3Fod ⁻	2.58(1)	NMR	49.4		20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.00(2)	NMR			20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	2.57(1)	NMR	~0	49.4	30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.00(2)	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	2.57(1)	NMR	49.4		40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.00(2)	NMR			40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	2.04	NMR			30	C ₆ D ₆ (Fod = heptafluoro- octanedionate)	113
	Eu ³⁺ ,3Fod ⁻	2.01(1)	NMR	38.4		20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	0.97(2)	NMR			20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	2.04(1)	NMR	~0	38.7	30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	0.98(2)	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	2.06(1)	NMR	39.3		40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	0.97(2)	NMR			40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Gd ³⁺	5.15	Calc'd			25?	PC (anhydrous)	111
	Dy ³⁺	5.13(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Dy ³⁺	1.17(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Er ³⁺	4.85	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Mn ²⁺	none	Spec			25?	H ₂ O	116
	Co ²⁺	3.25	Cal	-6.8	39.3	25	PC	117
	Co ²⁺ ,2TTA ⁻	2.45	Solv Extr. Rad			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	118
	Cu ²⁺	>5	Pot	-5.0(Cal)		25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	1.61(1)	ISE	-10.7(Cal)	-5.4	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	Ag ⁺	1.90(2)	ISE	-27.9(Cal)	-57.4	25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	Ag ⁺	3.98(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Ag ⁺	3.31(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Cd ²⁺	<2	Polg			25	H ₂ O, 0.1 M HNO ₃	119
	Tl ⁺	3.22(1)	Pot?	-9.4(Cal)	29.9	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Tl ⁺	<3(2)	Pot?	-10.6(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	2.00	Polg			25	H ₂ O, 0.1 M Et ₄ NClO ₄	120
	Pb ²⁺	<2	Polg			25	H ₂ O, 0.1 M HNO ₃	119
	Pb ²⁺	1.77(1)	ISE	-13.9(Cal)	-12.8	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	2.11(2)	ISE	-9.6(Cal)	8.1	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	CH ₃ OH ₂ ⁺		Spec	-243.9	-169.9	?	gas-phase ion-molecule equilibria	43
12C4-2	Na ⁺	1.57	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
12C4-3	Na ⁺	1.25	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	2.08	ISE			25	MeOH·H ₂ O (95:5)	140
12C4-4	t-C ₄ H ₉ NH ₃ ⁺	2.00	Solv Extr·NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
12C4-5	Na ⁺	1.45	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
12C4-6	Na ⁺	1.56	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
12C4-7	Na ⁺	0.8	ISE			25	MeOH	105
	K ⁺	1.2	ISE			25	MeOH	105
12C4-8	Na ⁺	1.54	ISE			25	MeOH (absolute)	127
	K ⁺	1.59	ISE			25	MeOH (absolute)	127
12C4-9	Na ⁺	1.54	ISE			25	MeOH (absolute)	127
	K ⁺	1.58	ISE			25	MeOH (absolute)	127
12C4-10	Na ⁺	1.11	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
12C4-11	Na ⁺	1.43	ISE			25	MeOH (absolute)	127
	K ⁺	1.81	ISE			25	MeOH (absolute)	127
12C4-12	Na ⁺	1.29	ISE			25	MeOH (absolute)	127
	K ⁺	1.67	ISE			25	MeOH (absolute)	127
Cy12C4-1	Na ⁺	3.42	ISE			25	MeOH	128
	K ⁺	3.30	ISE			25	MeOH	128
B12C4-1	Li ⁺	1.05(1)	Cal	-18.6	-42	25	MeCN (anion = SCN ⁻)	129, 130
	Li ⁺	1.75(2)	Cal	16.4	88	25	MeCN (anion = SCN ⁻)	129, 130
	Li ⁺	1.34	Cal	-6.95	2.4	25	MeOH	131
	Na ⁺	1.88(1)	Cal	-17.8	-24	25	MeCN (anion = SCN ⁻)	129, 130
	Na ⁺	2.62(2)	Cal	-19.8	-16	25	MeCN (anion = SCN ⁻)	129, 130
	Na ⁺	1.65(1)	Spec			25	MeCN (anion = SCN ⁻)	129
	Na ⁺	3.33(2)	Spec			25	MeCN (anion = SCN ⁻)	129

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	1.76(1)	Cal	-18.1	-27	25	MeCN (anion = SCN ⁻)	129, 130
	K ⁺	1.08(2)	Cal	-11.7	-19	25	MeCN (anion = SCN ⁻)	129, 130
	Ca ²⁺	0.4(1)	Cal	-22	-66	25	EtOH (anion = Cl ⁻)	132
	Ca ²⁺	1.6(2)	Cal	20	98	25	EtOH (anion = Cl ⁻)	132
	Ca ²⁺	0.4(1)	Cal	-21	-63	25	EtOH (anion = SCN ⁻)	132
	Ca ²⁺	1.4(2)	Cal	18	87	25	EtOH (anion = SCN ⁻)	132
	Ca ²⁺	nm	Cal	18	87	25	EtOH (anion = NO ₃ ⁻)	132
	Ca ²⁺	3.23(1)	Cal	-22.6	-14	25	MeCN (anion = SCN ⁻)	129, 130
	Ca ²⁺	1.55(2)	Cal	-3.0	20	25	MeCN (anion = SCN ⁻)	129, 130
	Ca ²⁺	3.22(1)	Cal	-23.0	-15.5	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	1.56(2)	Cal	-2.5	21.5	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.80(1)	Spec			25	MeCN (anion = SCN ⁻)	129
	Ca ²⁺	1.96(2)	Spec			25	MeCN (anion = SCN ⁻)	129
	Ca ²⁺	2.57(1)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	1.89(2)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.91(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	2.89(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	NH ₄ ⁺	1.60(1)	Cal	-10.4	-4	25	MeCN (anion = SCN ⁻)	129, 130
	NH ₄ ⁺	1.55(2)	Cal	-2.0	23	25	MeCN (anion = SCN ⁻)	129, 130
	NH ₄ ⁺	1.51(1)	Spec			25	MeCN (anion = SCN ⁻)	129
	NH ₄ ⁺	1.63(2)	Spec			25	MeCN (anion = SCN ⁻)	129
B12C4-2	Na ⁺	1.7(1)	Cal	-18	-28	25	MeCN (anion = SCN ⁻)	129, 134
	Na ⁺	1.87(2)	Cal	-27	-55	25	MeCN (anion = SCN ⁻)	129, 134
	K ⁺	0.8(1)	Cal	-21	-55	25	MeCN (anion = SCN ⁻)	134
	K ⁺	1.5(2)	Cal	-19	-35	25	MeCN (anion = SCN ⁻)	134
	Ca ⁺	2.18	Cal	-29.4	-57	25	MeCN (anion = SCN ⁻)	129, 134
	NH ₄ ⁺	1.05(1)	Cal	-12	-20	25	MeCN (anion = SCN ⁻)	134
B12C4-3	NH ₄ ⁺	1.48(2)	Cal	-3	18	25	MeCN (anion = SCN ⁻)	134
	Na ⁺	4.04	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	K ⁺	4.13	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	Rb ⁺	4.08	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	Cs ⁺	3.88	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
Py ₂ 12C4-1	H ⁺	7.9(1)	Pot			20	H ₂ O	136
	H ⁺	<3(2)	Pot			20	H ₂ O	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.35	Solv Extr-UV (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.89	Solv Extr-UV (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	136
A12C4-1	Na ⁺	1.3(1)	ISE			25	MeOH (anhydrous)	137
	Na ⁺	2.0(2)	ISE			25	MeOH (anhydrous)	137
	Na ⁺	2.42	ISE			25	MeOH (anhydrous), [L] = 0.51x10 ⁻³ M	138
	Na ⁺	2.40	ISE			25	MeOH (anhydrous), [L] = 0.61x10 ⁻³ M	138
	Na ⁺	2.17	ISE			25	MeOH (anhydrous), [L] = 1.02x10 ⁻³ M	138
	Na ⁺	2.10	ISE			25	MeOH (anhydrous), [L] = 1.83x10 ⁻³ M	138
	Na ⁺	2.00	ISE			25	MeOH (anhydrous), [L] = 2.03x10 ⁻³ M	138
	Na ⁺	1.96	ISE			25	MeOH (anhydrous), [L] = 2.44x10 ⁻³ M	138
	Na ⁺	1.84	ISE			25	MeOH (anhydrous), [L] = 3.05x10 ⁻³ M	138
	Na ⁺	1.75	ISE			25	MeOH (anhydrous), [L] = 4.07x10 ⁻³ M	138
	Na ⁺	1.70	ISE			25	MeOH (anhydrous), [L] = 5.08x10 ⁻³ M	138
A12C4-2	H ⁺	9.92	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Li ⁺	<2.0	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	2.04	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
	Na ⁺	2.03	ISE			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	2.10	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	K ⁺	1.80	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Ca ²⁺	2.35	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Sr ²⁺	2.75	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
A12C4-3	H ⁺	9.0	Pot			25	MeOH-H ₂ O (9:1)	140
	Na ⁺	1.79	ISE			25	MeOH-H ₂ O (95:5)	140
	K ⁺	1.25	ISE			25	MeOH-H ₂ O (95:5)	140
A12C4-4	Na ⁺	2.08	ISE			25	MeOH (anhydrous)	138, 141
A12C4-5	Na ⁺	2.49	ISE			25	MeOH (anhydrous)	138, 141
A12C4-6	Na ⁺	1.77	ISE			25	MeOH (anhydrous)	138, 141
A12C4-7	H ⁺	10.31(1)	Spec			25?	H ₂ O, 0.1 M CsCl	142
	H ⁺	5.77(2)	Spec			25?	H ₂ O, 0.1 M CsCl	142
A12C4-8	Na ⁺	2.35	ISE			25	MeOH (anhydrous)	139, 141
A12C4-9	Na ⁺	2.52	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
A12C4-10	H ⁺	8.96	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Li ⁺	<2.0	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	2.73	ISE			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.10	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.17	ISE			25	MeOH (anhydrous)	143
	Na ⁺	3.25	ISE			25	MeOH	141
	K ⁺	2.36	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	K ⁺	2.73	ISE			25	MeOH	141
	Ca ²⁺	3.31	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Sr ²⁺	3.59	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	NH ₄ ⁺	3.06	ISE			25	MeOH	141
A12C4-11	Na ⁺	3.60	ISE			25	MeOH (anhydrous)	141, 143
A12C4-12	Na ⁺	3.97	ISE			25	MeOH (anhydrous)	138, 143
	Na ⁺	3.64	ISE			25	MeOH	141
	K ⁺	3.85	ISE			25	MeOH	141
	NH ₄ ⁺	3.29	ISE			25	MeOH	141
A12C4-13	Na ⁺	3.76	ISE			25	MeOH (anhydrous)	141, 143
A12C4-14	Na ⁺	3.97	ISE			25	MeOH (anhydrous)	138, 141
A12C4-15	Na ⁺	3.73	ISE			25	MeOH	141
	K ⁺	4.34	ISE			25	MeOH	141
	NH ₄ ⁺	3.49	ISE			25	MeOH	141
A12C4-16	Na ⁺	3.84	ISE			25	MeOH	141
	K ⁺	4.27	ISE			25	MeOH	141
	NH ₄ ⁺	3.45	ISE			25	MeOH	141
A12C4-17	Na ⁺	2.75	ISE			25	MeOH (anhydrous)	138, 141
A12C4-18	Na ⁺	1.38	ISE			25	MeOH (anhydrous)	138, 141
A12C4-19	Na ⁺	2.57	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
A12C4-20	Na ⁺	2.23	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
A12C4-21	Li ⁺	2.71	Cal	-3.00	41.6	25	MeOH	80
	Na ⁺		Cal	-20.8		25	MeOH	80
	K ⁺		Cal	-13.1		25	MeOH	80
	Rb ⁺		Cal		29.2	25	MeOH	80
	Ca ²⁺	2.72	Cal	-6.80		25	MeOH	80
	Sr ²⁺		Cal	-11.9		25	MeOH	80
	Ba ²⁺		Cal	-19.1		25	MeOH	80
	Ag ⁺		Cal	-49.9		25	MeOH	80
A ₂ 12C4-1	H ⁺	9.93(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	H ⁺	7.74(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	H ⁺	11.07(1)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	146
	H ⁺	8.33(2)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	146
	Ca ²⁺	2.09	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.9-11	146
	Ba ²⁺	2.34(1)	Cal	-13.3	-14.8	25	MeOH	80, 109
	Ba ²⁺	<2(2)	Cal	<15		25	MeOH	109
	Co ²⁺	6.01	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Co ²⁺	-4.3 (CoLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Co ²⁺ + L + H ₂ O)	145
	Ni ²⁺	6.73	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Ni ²⁺	-1.3 (NiLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Ni ²⁺ + L + H ₂ O)	145
	Cu ²⁺	7.92	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Cu ²⁺	0.23 (CuLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Cu ²⁺ + L + H ₂ O)	145
	Ag ⁺	4.65	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Ag ⁺	12.0 (AgHL)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Ag ⁺ + L + H ⁺)	145
	Ag ⁺	6.514(1)	ISE	-31.9(Cal)	17.1	25	MeOH, 0.05 M Et ₄ NClO ₄	80, 109
	Ag ⁺	3.01(2)	ISE	-21.5(Cal)	-14.8	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Zn ²⁺	6.51	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Zn ²⁺	-2.1 (ZnLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Zn ²⁺ + L + H ₂ O)	145
	Cd ²⁺	6.55(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Cd ²⁺	5.45(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Cd ²⁺	-1.1 (CdLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Cd ²⁺ + L + H ₂ O)	145
	Tl ⁺	2.48(1)	Pot?	-28.5(Cal)	-48.3	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Tl ⁺	<3(2)	Pot?	8.0(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	6.37	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145
	Pb ²⁺	-2.9 (PbLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , (Pb ²⁺ + L + H ₂ O)	145
	Pb ²⁺	7.22(1)	ISE	-27.2(Cal)	46.3	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	1.73(2)	ISE	4.7(Cal)	48.7	25	MeOH, 0.05 M Et ₄ NClO ₄	109
A ₂ 12C4-2	H ⁺	10.0(1)	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147
	H ⁺	8.6(2)	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147
	Li ⁺	2.4	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147
	Li ⁺	av 2.65	NMR			30	MeOH	147
	Na ⁺	3.6	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147
	Na ⁺	~3.3	NMR			30	MeOH	147
	K ⁺	2.0	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147
	Ca ²⁺	6.9	Pot			25	MeOH-H ₂ O (9:1), 0.1 M Me ₄ NBr	147

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
A ₂ 12C4-3	Li ⁺	5.38	Cal	-12.7	60.1	25	MeOH (anhydrous)	80, 148	
	Na ⁺	4.72	Cal	-26.0	2.68	25	MeOH (anhydrous)	80, 148	
	K ⁺	3.85	Cal	-25.7	-12.8	25	MeOH (anhydrous)	80, 148	
	Rb ⁺	3.08	Cal	-22.7	-17.5	25	MeOH (anhydrous)	80, 148	
	Ca ²⁺	>5.5	Cal	-46.6		25	MeOH (anhydrous)	80, 148	
	Ca ²⁺	>8.2	Cal	when $T\Delta S \sim 0$		25	MeOH (anhydrous)	148	
	Sr ²⁺	>5.5	Cal	-35.8		25	MeOH (anhydrous)	80, 148	
	Ba ²⁺	4.94	Cal	-33.0	-16.4	25	MeOH (anhydrous)	80, 148	
	Ag ⁺	>5.5	Cal	-59.1		25	MeOH (anhydrous)	80, 148	
	A ₂ 12C4-4	Li ⁺	2.99	Cal	-23.8	-22.8	25	MeOH (anhydrous)	80, 148
Na ⁺		3.01	Cal	-37.6	-68.8	25	MeOH (anhydrous)	80, 148	
K ⁺		3.03	Cal	-30.6	-45.0	25	MeOH (anhydrous)	80, 148	
Rb ⁺		3.08	Cal	-11.0	21.8	25	MeOH (anhydrous)	80, 148	
Ca ²⁺		4.10	Cal	-45.9	-75.8	25	MeOH (anhydrous)	80, 148	
Sr ²⁺		4.36	Cal	-19.9	16.4	25	MeOH (anhydrous)	80, 148	
Ba ²⁺		3.30	Cal	-44.5	-86.2	25	MeOH (anhydrous)	80, 148	
Ag ⁺		>5.5	Cal	-82.5		25	MeOH (anhydrous)	80, 148	
A ₂ 12C4-5	H ⁺	9.558(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
	H ⁺	7.47(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
A ₂ 12C4-6	H ⁺	2.10(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
	H ⁺	8.43(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	H ⁺	5.77(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Cu ²⁺	8.7(unreliable)							
	Ni ²⁺	5.0(unreliable)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Pb ²⁺	6.3(unreliable)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
K ₂ A ₂ 12C4-1	H ⁺	6.44(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	3.49(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	2.37(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	1.66(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	La ³⁺	5.48	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Ce ³⁺	5.55	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Pr ³⁺	5.92	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Nd ³⁺	5.93	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Sm ³⁺	6.13	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Eu ³⁺	6.06	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Gd ³⁺	5.63	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Td ³⁺	6.12	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Dy ³⁺	6.40	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Ho ³⁺	6.30	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Er ³⁺	6.36	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Tm ³⁺	6.53	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Yb ³⁺	6.64	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
A ₃ 12C4-1	Lu ³⁺	6.80	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	10.18(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 151	
	H ⁺	8.56(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 151	
	H ⁺	1.43(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 151	
	H ⁺	10.109(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
	H ⁺	8.525(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
	H ⁺	1.56(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
	Ca ²⁺	2.03	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Ca ²⁺	2.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Ni ²⁺	12.15	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Cu ²⁺	15.85	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Zn ²⁺	10.53	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Cd ²⁺	10.78	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
	Pb ²⁺	11.54	Pot			25	H ₂ O, 0.1 M NaNO ₃	50	
A ₃ 12C4-2	H ⁺	10.973(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
	H ⁺	8.286(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
A ₃ 12C4-3	H ⁺	1.67(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	149	
	H ⁺	10.14(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	H ⁺	6.46(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	H ⁺	1.11(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Ca ²⁺	4.60	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Sr ²⁺	3.92	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Ba ²⁺	3.30	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Cu ²⁺	13.43	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Zn ²⁺	9.92	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Cd ²⁺	12.77	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Pb ²⁺	12.17	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	A ₃ 12C4-4	H ⁺	11.61(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149, 152
	H ⁺	7.70(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149, 152	
	H ⁺	4.05(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149, 152	
	H ⁺	2.77(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149, 152	
	H ⁺	<2(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
Na ⁺	3.266	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152		
K ⁺	2.78	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152		
Mg ⁺	10.254	Pot	10.0(Cal)	230	25	H ₂ O, 0.1 M Me ₄ NNO ₃	152		
Mg ⁺	4.31(MgHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152		
Ca ²⁺	12.984	Pot	-42.3(Cal)	105	25	H ₂ O, 0.1 M Me ₄ NNO ₃	152		
Ca ²⁺	5.30(CaHL)								
	Sr ²⁺	11.37	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Sr ²⁺	4.48(SrHL)	Pot	-40.2(Cal)	83.7	25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Ba ²⁺	9.915	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Ba ²⁺		Pot	-33.9(Cal)	75.3	25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref	
	Ba ²⁺	4.34(BaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Mn ²⁺	16.09	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Mn ²⁺	8.62(MnHL)							
			Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Fe ²⁺	16.55	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Fe ²⁺	8.94(FeHL)							
			Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Co ²⁺	19.54	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Co ²⁺	10.57(CoHL)							
			Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Ni ²⁺	18.04	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Ni ²⁺	10.09(NiHL)							
			Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Cu ²⁺	20.17	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Cu ²⁺	11.66(CuHL)							
			Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Zn ²⁺	18.66	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
	Zn ²⁺	9.90(ZnHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	152	
A ₃ 12C4-5	H ⁺	11.24(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
	H ⁺	6.02(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
	H ⁺	2.94(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
	H ⁺	1.4(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	149	
CHART III									
PyA ₃ 12C4-1	H ⁺	10.6(1)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	7.6(2)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	4.4(3)	Pot			20	H ₂ O, 0.1 M KCl	153	
	Mg ²⁺	7.2	Pot			20	H ₂ O, 0.1 M KCl	153	
	Ca ²⁺	8.3	Pot			20	H ₂ O, 0.1 M KCl	153	
	Sr ²⁺	8.0	Pot			20	H ₂ O, 0.1 M KCl	153	
	Co ²⁺	13.3	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cu ²⁺	14.3	Pot			20	H ₂ O, 0.1 M KCl	153	
	Zn ²⁺	13.3	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cd ²⁺	13.8	Pot			20	H ₂ O, 0.1 M KCl	153	
	Pb ²⁺	13.7	Pot			20	H ₂ O, 0.1 M KCl	153	
A ₄ 12C4-1	H ⁺	(1+2)	Cal	-99.83		25?	H ₂ O?	154, 157	
	H ⁺	10.6(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	H ⁺	9.6(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	H ⁺	10.51(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	9.49(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	1.6(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	0.8(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	Li ⁺	<-2.00	Pot			25	H ₂ O, 0.5 M KNO ₃	156	
	Mg ²⁺	2.25	Pot			25	H ₂ O, 0.5 M KNO ₃	156	
	Ca ²⁺	3.12	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
	Co ²⁺		Cal	-47.99		25?	H ₂ O?	154, 157	
	Co ²⁺		Cal	-61.3		25?	H ₂ O?, pH 8-8.5 (Co ²⁺ + H ₂ L ²⁺ + 2OH ⁻ -> CoL ²⁺ + 2H ₂ O)	154, 157	
	Co ²⁺	13.79	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	Ni ²⁺ (H) ^d		Cal	-49.8		25	H ₂ O	158	
	Ni ²⁺ (L) ^d	14.4	Pot			25	H ₂ O, 0.1 M NaNO ₃	159	
	Ni ²⁺	16.4	Pot			25	H ₂ O, 0.1 M NaNO ₃	160	
	Ni ²⁺ (H) ^d	16.4	Spec			25	H ₂ O, 0.5 M NaClO ₄ (Ni ²⁺ + L + 2H ₂ O?)	161	
	Cu ²⁺	23.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	159	
	Cu ²⁺	22.7	Spec			25	H ₂ O, 0.5 M NaClO ₄	161	
	Cu ²⁺	23.29	Spec			25	H ₂ O, I = 0.5 (NaNO ₃ + HNO ₃)	162	
	Ag ⁺	4.9	ISE			25	H ₂ O, borate buffer, pH 9	121	
	Zn ²⁺	16.2	Pot			25	H ₂ O, 0.1 M NaNO ₃	159	
	Cd ²⁺	14.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	159	
	Pb ²⁺	15.9	Pot			25	H ₂ O, 0.1 M NaNO ₃	159	
A ₄ 12C4-2	H ⁺	10.76(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	163, 164	
	H ⁺	9.41(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	163, 164	
	Cu ²⁺	17.89	Pot			25	H ₂ O, 0.5 M KNO ₃	163, 164	
	Cu ²⁺	9.30(CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃	163, 164	
A ₄ 12C4-3	H ⁺	11.07(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
	H ⁺	8.95(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
	Cu ²⁺	18.37	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
	Zn ²⁺	14.04	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
	Cd ²⁺	13.06	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
	Pb ²⁺	13.91	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
A ₄ 12C4-4	H ⁺	11.36(1)	Pot			20	H ₂ O, 0.1 M KCl	165	
	H ⁺	9.73(2)	Pot			20	H ₂ O, 0.1 M KCl	165	
	H ⁺	4.54(3)	Pot			20	H ₂ O, 0.1 M KCl	165	
	H ⁺	4.41(4)	Pot			20	H ₂ O, 0.1 M KCl	165	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	12.09(1)	Pot	-35.1(Cal)	113	25	H ₂ O, 0.1 M Me ₄ NNO	166, 167
	H ⁺	9.68(2)	Pot	-33.0(Cal)	75	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	H ⁺	4.548(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	H ⁺	4.13(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	H ⁺	11.22(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	9.75(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	4.37(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	4.36(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Li ⁺	4.32	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Na ⁺	4.38	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	K ⁺	1.64	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Be ²⁺	13.64	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Be ²⁺	7.68(BeHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Be ²⁺	2.26(BeH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Mg ²⁺	11.915	Pot	7.9(Cal)	255	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Mg ²⁺	3.917(MgHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ca ²⁺	17.226	Pot	-48.9(Cal)	167	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ca ²⁺	8.68(CaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ca ²⁺	3.11(CaH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Sr ²⁺	15.22	Pot	-43.9(Cal)	146	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Sr ²⁺	7.80(SrHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Sr ²⁺	2.28(SrH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ba ²⁺	12.873	Pot	-35.6(Cal)	125	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ba ²⁺	6.415(BaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	La ³⁺	22.86	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Ce ³⁺	3.30	Kin			25	H ₂ O, I = constant (3 M NaClO ₄ + HClO ₄)	168
	Ce ³⁺	23.39	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Pr ³⁺	23.01	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Nd ³⁺	22.99	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Sm ³⁺	23.04	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Eu ³⁺	28.2	Pot			20	H ₂ O, 1.0 M NaCl	169
	Eu ³⁺	23.45	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Gd ³⁺	24.67	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Tb ³⁺	28.6	Pot			20	H ₂ O, 1.0 M NaCl	169
	Tb ³⁺	24.22	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Dy ³⁺	24.79	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Ho ³⁺	24.54	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Er ³⁺	24.43	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Tm ³⁺	24.41	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Yb ³⁺	25.00	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Lu ³⁺	29.2	Pot			20	H ₂ O, 1.0 M NaCl	169
	Lu ³⁺	25.41	Spec			25	H ₂ O, 0.01 M acetate buffer, pH 3.89, 0.1 M NaCl	66
	Co ²⁺	20.17	Pot	-55.6(Cal)	201	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Co ²⁺	12.08(CoHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Co ²⁺	6.05(CoH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ni ²⁺	20.03	Pot	-55.2(Cal)	197	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ni ²⁺	11.45(NiHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Ni ²⁺	6.49(NiH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Cu ²⁺	22.21	Pot	-59.8(Cal)	226	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Cu ²⁺	14.416(CuHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Cu ²⁺	8.316(CuH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Zn ²⁺	21.049	Pot	-44.4(Cal)	255	25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Zn ²⁺	13.145(ZnHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
	Zn ²⁺	7.01(ZnH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	166, 167
A ₄ 12C4-5	H ⁺	9.98(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	H ⁺	8.26(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Ca ²⁺	5.68	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Sr ²⁺	5.02	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Ba ²⁺	3.74	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Cu ²⁺	19.48	Spec			25	H ₂ O, 0.5 M NaNO ₃	151
	Zn ²⁺	13.45	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Cd ²⁺	17.46	Spec			25	H ₂ O, 0.5 M NaNO ₃	151
	Pb ²⁺	15.07	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
A ₄ 12C4-6	H ⁺	10.9(1)	Pot			25	H ₂ O, 0.1 M NaCl	70

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	9.2(2)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	8.1(3)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	6.3(4)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	5.4(5)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	1.8(6)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	1.3(7)	Pot			25	H ₂ O, 0.1 M NaCl	70
	H ⁺	12.6(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	9.3(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	8.0(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	6.0(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	5.2(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	70
	H ⁺	12.6(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	9.2(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	8.1(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	6.3(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	5.4(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	1.8(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	H ⁺	1.3(7)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	170
	Dy ³⁺	25.0	Spec			25	H ₂ O, 0.1 M NaCl, pH 3.89 (0.01 M acetate buffer)	170
	Dy ³⁺	19.8 (DyHL)	Spec			25	H ₂ O, 0.1 M NaCl, pH 3.89 (0.01 M acetate buffer)	170
	Dy ³⁺	15.2 (DyH ₂ L)	Spec			25	H ₂ O, 0.1 M NaCl, pH 3.89 (0.01 M acetate buffer)	170
A ₄ 12C4-7	H ⁺	12.11(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	11.52(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	8.46(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	7.28(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	5.73(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	4.88(6)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	<2(7)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	<1(8)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	H ⁺	13.7(1)	NMR			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	12.2(2)	NMR			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	9.28(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	8.09(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	6.12(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	5.22(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	11.44(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	172
	H ⁺	8.90(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	172
	H ⁺	7.71(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	172
	H ⁺	5.96(5)	Pot			25	H ₂ O, 0.1 M NaNO ₃	172
	H ⁺	5.10(6)	Pot			25	H ₂ O, 0.1 M NaNO ₃	172
	H ⁺	9.03(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	172
	H ⁺	7.81(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	172
	H ⁺	6.03(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	172
	H ⁺	5.13(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	172
	H ⁺	9.06(3)	Pot			25	H ₂ O, 0.1 M RbNO ₃	172
	H ⁺	7.83(4)	Pot			25	H ₂ O, 0.1 M RbNO ₃	172
	H ⁺	6.03(5)	Pot			25	H ₂ O, 0.1 M RbNO ₃	172
	H ⁺	5.13(6)	Pot			25	H ₂ O, 0.1 M RbNO ₃	172
	H ⁺	9.07(3)	Pot			25	H ₂ O, 0.1 M CsNO ₃	172
	H ⁺	7.82(4)	Pot			25	H ₂ O, 0.1 M CsNO ₃	172
	H ⁺	6.02(5)	Pot			25	H ₂ O, 0.1 M CsNO ₃	172
	H ⁺	5.15(6)	Pot			25	H ₂ O, 0.1 M CsNO ₃	172
	Na ⁺	16.72 (NaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Na ⁺ + L + H ⁺)	172
	Na ⁺	27.93 (NaH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Na ⁺ + L + 2H ⁺)	172
	Na ⁺	36.67 (NaH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Na ⁺ + L + 3H ⁺)	172
	Na ⁺	44.10 (NaH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Na ⁺ + L + 4H ⁺)	172
	K ⁺	15.98 (KHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (K ⁺ + L + H ⁺)	172
	K ⁺	27.49 (KH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (K ⁺ + L + 2H ⁺)	172
	K ⁺	26.36 (KH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (K ⁺ + L + 3H ⁺)	172
	K ⁺	43.79 (KH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (K ⁺ + L + 4H ⁺)	172
	Rb ⁺	27.35 (RbH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Rb ⁺ + L + 2H ⁺)	172
	Rb ⁺	36.28 (RbH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Rb ⁺ + L + 3H ⁺)	172
	Rb ⁺	43.72 (RbH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Rb ⁺ + L + 4H ⁺)	172
	Cs ⁺	27.16 (CsH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + 2H ⁺)	172
	Cs ⁺	36.22 (CsH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + 3H ⁺)	172
	Cs ⁺	43.65 (CsH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + 4H ⁺)	172
	Mg ²⁺	7.3 (MgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Mg ²⁺	6.0(MgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mg ²⁺	3.2(MgH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Mg ²⁺	3.1(MgH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mg ²⁺	2.2(MgH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mg ²⁺	9.38	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	6.37(Mg ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	20.57	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(MgHL)					(Mg ²⁺ + L + H ⁺)	172
	Mg ²⁺	30.60	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(MgH ₂ L)					(Mg ²⁺ + L + 2H ⁺)	172
	Mg ²⁺	39.53	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(MgH ₃ L)					(Mg ²⁺ + L + 3H ⁺)	172
	Mg ²⁺	46.09	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(MgH ₄ L)					(Mg ²⁺ + L + 4H ⁺)	172
	Mg ²⁺	24.78	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Mg ₂ HL)					(2Mg ²⁺ + L + H ⁺)	172
	Ca ²⁺	10.3	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Ca ²⁺	7.7(CaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ca ²⁺	4.7(CaH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ca ²⁺	3.1(CaH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ca ²⁺	11.12	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	7.55(Ca ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	45.65	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(CaH ₄ L)					(Ca ²⁺ + L + 4H ⁺)	172
	Ca ²⁺	28.32	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Ca ₂ HL)					(2Ca ²⁺ + L + H ⁺)	172
	Ca ²⁺	36.03	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Ca ₂ H ₂ L)					(2Ca ²⁺ + L + 2H ⁺)	172
	Sr ²⁺	9.8	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Sr ²⁺	7.2(SrHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Sr ²⁺	3.8(SrH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Sr ²⁺	10.95	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Sr ²⁺	7.40(Sr ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Sr ²⁺	45.34	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(SrH ₄ L)					(Sr ²⁺ + L + 4H ⁺)	172
	Sr ²⁺	27.35	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Sr ₂ HL)					(2Sr ²⁺ + L + H ⁺)	172
	Sr ²⁺	34.68	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Sr ₂ H ₂ L)					(2Sr ²⁺ + L + 2H ⁺)	172
	Ba ²⁺	8.8	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Ba ²⁺	6.1(BaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ba ²⁺	1.9(BaH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ba ²⁺	10.65	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ba ²⁺	6.47(Ba ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ba ²⁺	38.13	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(BaH ₃ L)					(Ba ²⁺ + L + 3H ⁺)	172
	Ba ²⁺	25.78	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	
		(Ba ₂ HL)					(2Ba ²⁺ + L + H ⁺)	172
	La ³⁺	25.0	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	La ³⁺	19.3(LaHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	La ³⁺	13.7(LaH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	La ³⁺	10.3(LaH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	La ³⁺	7.3(LaH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mn ²⁺	16.9	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Mn ²⁺	12.9(MnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mn ²⁺	8.8(MnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mn ²⁺	7.1(MnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Mn ²⁺	4.6(MnH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Fe ³⁺	23.7	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Fe ³⁺	19.4(FeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Fe ³⁺	15.3(FeH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Fe ³⁺	12.5(FeH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Fe ³⁺	10.0(FeH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Co ²⁺	20.8	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Co ²⁺	16.5(CoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Co ²⁺	11.8(CoH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Co ²⁺	9.2(CoH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Co ²⁺	6.8(CoH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Co ²⁺	6.39	Pot			25	H ₂ O, 1.0 M KNO ₃	
		(Co ₂ L)					(Co ²⁺ + CoL ²⁺)	73
	Co ²⁺	27.2	Pot			25	H ₂ O, 1.0 M KNO ₃	
		(Co ₂ L)					(2Co ²⁺ + +L)	73

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Co ²⁺	5.79 (Co ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CoHL ³⁺)	73
	Co ²⁺	22.3 (Co ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Co ²⁺ + HL ⁺)	73
	Co ²⁺ ,Ni ²⁺	6.10 (CoNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CoL ²⁺)	73
	Co ²⁺ ,Ni ²⁺	26.9 (CoNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Co ²⁺ + L)	73
	Co ²⁺ ,Ni ²⁺	5.58 (CoNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CoHL ³⁺)	73
	Co ²⁺ ,Ni ²⁺	22.1 (CoNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Co ²⁺ + HL ⁺)	73
	Ni ²⁺	19.0	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Ni ²⁺	14.7(NiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ni ²⁺	10.7(NiH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ni ²⁺	8.4(NiH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Ni ²⁺	6.6(NiH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cu ²⁺	6.62 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuL ²⁺)	73
	Cu ²⁺	32.0 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + L)	73
	Cu ²⁺	5.82 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuHL ³⁺)	73
	Cu ²⁺	26.5 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + HL ⁺)	73
	Cu ²⁺	25.4	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Cu ²⁺	20.7(CuHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cu ²⁺	15.6(CuH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cu ²⁺	13.3(CuH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cu ²⁺	10.6(CuH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cu ²⁺ ,Be ²⁺	10.4 (CuBeL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + CuL ²⁺)	73
	Cu ²⁺ ,Be ²⁺	9.8 (CuBeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Be ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ ,Mn ²⁺	4.67 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuL ²⁺)	73
	Cu ²⁺ ,Mn ²⁺	30.1 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ ,Mn ²⁺	4.30 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ ,Mn ²⁺	25.0 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ ,Co ²⁺	4.61 (CuCoL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CuL ²⁺)	73
	Cu ²⁺ ,Co ²⁺	30.0 (CuCoL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ ,Co ²⁺	4.20 (CuCoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ ,Co ²⁺	24.9 (CuCoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ ,Ni ²⁺	4.25 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuL ²⁺)	73
	Cu ²⁺ ,Ni ²⁺	29.7 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ ,Ni ²⁺	3.93 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ ,Ni ²⁺	24.6 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + HL ⁺)	73
	Zn ²⁺	24.8	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Zn ²⁺	19.9(ZnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Zn ²⁺	15.1(ZnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Zn ²⁺	11.7(ZnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Zn ²⁺	9.2(ZnH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cd ²⁺	22.9	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Cd ²⁺	19.3(CdHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cd ²⁺	15.3(CdH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cd ²⁺	13.5(CdH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Cd ²⁺	10.3(CdH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Hg ²⁺	25.1	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Hg ²⁺	21.1(HgHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Hg ²⁺	16.7(HgH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Hg ²⁺	14.3(HgH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Hg ²⁺	10.7(HgH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Pb ²⁺	23.3	Pot			25	H ₂ O, 1.0 M KNO ₃	74, 171
	Pb ²⁺	19.4(PbHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Pb ²⁺	14.9(PbH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Pb ²⁺	12.4(PbH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171
	Pb ²⁺	9.9(PbH ₄ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	171

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K-mol	T, °C	conditions ^c	ref	
A ₄ 12C4-8	H ⁺	12.4(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	11.2(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	8.34(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	7.63(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	6.84(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	6.21(6)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	2.30(7)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	H ⁺	<2 (8)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Be ²⁺	15.9	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Be ²⁺	14.0(BeHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Be ²⁺	10.9(BeH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Be ²⁺	10.5(BeH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Mg ²⁺	<1	Pot			25	H ₂ O, 1.0 M KNO ₃	74	
	Mg ²⁺	no protonated complex was observed		Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Ca ²⁺	<1		Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Ca ²⁺	no protonated complex was observed		Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Sr ²⁺	none		Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Ba ²⁺	none		Pot			25	H ₂ O, 1.0 M KNO ₃	74
	Mn ²⁺	12.4	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Mn ²⁺	8.9(MnHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Mn ²⁺	5.6(MnH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Mn ²⁺	4.6(MnH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Co ²⁺	14.8	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Co ²⁺	10.7(CoHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Co ²⁺	7.41(CoH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Co ²⁺	5.6(CoH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Ni ²⁺	12.0	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Ni ²⁺	8.8(NiHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Ni ²⁺	4.7(NiH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Ni ²⁺	3.9(NiH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cu ²⁺	27.1	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cu ²⁺	23.1(CuHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cu ²⁺	19.5(CuH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cu ²⁺	18.1(CuH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cu ²⁺	16.4(CuH ₄ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Zn ²⁺	24.6	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Zn ²⁺	20.7(ZnHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Zn ²⁺	17.0(ZnH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Zn ²⁺	15.5(ZnH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Zn ²⁺	13.0(ZnH ₄ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cd ²⁺	20.8	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cd ²⁺	17.1(CdHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cd ²⁺	13.6(CdH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cd ²⁺	12.7(CdH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Cd ²⁺	11.1(CdH ₄ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Hg ²⁺	29.6	Pot				25	H ₂ O, 1.0 M KNO ₃	74
	Hg ²⁺	25.1(HgHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74
Hg ²⁺	21.4(HgH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Hg ²⁺	19.6(HgH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Hg ²⁺	17.2(HgH ₄ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Pb ²⁺	16.3	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Pb ²⁺	12.3(PbHL)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Pb ²⁺	8.5(PbH ₂ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Pb ²⁺	7.1(PbH ₃ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
Pb ²⁺	5.6(PbH ₄ L)	Pot				25	H ₂ O, 1.0 M KNO ₃	74	
A ₄ 12C4-9	Li ⁺	3.3	Cond			25	EtOH-CHCl ₃ (1:1)	173	
	Li ⁺	5.91	Cond			25	THF-CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	173, 174	
	Na ⁺	6.29	Cond			25	THF-CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	173, 174	
	K ⁺	5.04	Cond			25	THF-CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	173, 174	
	Cs ⁺	3.6	Cond			25	THF-CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	173, 174	
	MgI ⁺	2.6	Cond			25	EtOH-CHCl ₃ (1:1) (anion = I ⁻)	173	
	CaI ⁺	2.9	Cond			25	EtOH-CHCl ₃ (1:1) (anion = I ⁻)	173	
A ₄ 12C4-10	H ⁺	9.6(1)	Pot			25	H ₂ O, 0.1 M NaCl	175	
	H ⁺	9.2(2)	Pot			25	H ₂ O, 0.1 M NaCl	175	
	H ⁺	4.4(3)	Pot			25	H ₂ O, 0.1 M NaCl	175	
	H ⁺	1.7(4)	Pot			25	H ₂ O, 0.1 M NaCl	175	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
	Gd ³⁺	20.1	Pot			25	H ₂ O, 0.1 M NaCl	175
	Gd ³⁺	16.2	Pot			25	H ₂ O, 0.1 M NaCl, (conditional log K at pH 7.4)	175
A ₄ 12C4-11	H ⁺	11.30(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	H ⁺	10.25(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	Li ⁺	5.23	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	Na ⁺	5.84	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
	Ca ²⁺	6.80	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	80
A ₄ 12C4-12	H ⁺	10.90(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	159
	H ⁺	10.31(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	159
	H ⁺	6.50(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	159
	H ⁺	3.18(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	159
	Ni ²⁺ (L) ^d	14.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	159, 176
	Cu ²⁺	21.50	Pot			25	H ₂ O, 0.1 M NaNO ₃	159, 176
	Zn ²⁺	10.95	Pot			25	H ₂ O, 0.1 M NaNO ₃	159, 176
	Cd ²⁺	10.07	Pot			25	H ₂ O, 0.1 M NaNO ₃	159, 176
	Pb ²⁺	11.71	Pot			25	H ₂ O, 0.1 M NaNO ₃	159, 176
K ₂ A ₄ 12C4-1	H ⁺	7.48(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₂ L = H ₃ L ⁺)	177
	H ⁺	4.17(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₃ L ⁺ = H ₄ L ²⁺)	177
	H ⁺	7.68(1)	Pot			25	H ₂ O, 0.5 M KNO ₃ (H ⁺ + H ₂ L = H ₃ L ⁺)	177
	H ⁺	4.40(2)	Pot			25	H ₂ O, 0.5 M KNO ₃ (H ⁺ + H ₃ L ⁺ = H ₄ L ²⁺)	177
	H ⁺	7.60(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	178
	H ⁺	4.40(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	178
	H ⁺	7.40(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	178
	H ⁺	4.20(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	178
	Ni ²⁺	4.38	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + H ₂ L)	177
	Ni ²⁺	2.98	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + H ₃ L ⁺)	177
	Ni ²⁺	-11.73	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + H ₂ L)	177
	Ni ²⁺	4.66	Pot			25	H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + H ₂ L)	177
	Ni ²⁺	3.49	Pot			25	H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + H ₃ L ⁺)	177
	Ni ²⁺	-12.09	Pot			25	H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + H ₂ L)	177
	Ni ²⁺	3.82	Pot			35	H ₂ O, 0.2 M NaClO ₄ , pH 9.5	178
	Ni ²⁺	-12.96	Pot			35	H ₂ O, 0.2 M NaClO ₄ , pH 9.5 (Ni ²⁺ + L)	178
	Cu ²⁺	5.34	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	3.45	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₃ L ⁺)	177
	Cu ²⁺	-0.69	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	-7.79	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	5.51	Pot			25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	3.83	Pot			25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + H ₃ L ⁺)	177
	Cu ²⁺	-0.78	Pot			25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	-8.11	Pot			25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + H ₂ L)	177
	Cu ²⁺	-1.44	Pot			25	H ₂ O, 0.2 M NaClO ₄ pH 9.60 (Cu ²⁺ + L)	178
	Cu ²⁺	-9.17	Pot			25	H ₂ O, 0.2 M NaClO ₄ pH 9.60 (Cu ²⁺ + L)	178
K ₂ A ₄ 12C4-2	H ⁺	3.46(1)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
K ₂ PyT12C4-1	Eu ³⁺ , 3Fod ⁻	2.76	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
K ₂ PyT12C4-2	Eu ³⁺ , 3Fod ⁻	3.44	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
A ₃ T12C4-1	H ⁺	9.53(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	8.15(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	3.09(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	9.23(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	7.95(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	2.9(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Fe ²⁺	7.82	Pot			35	H ₂ O, 0.2 M NaClO ₄	180

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
T ₂ 12C4-1	Co ²⁺	11.11	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Ni ²⁺	9.45	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Cu ²⁺	17.98	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	Hg ²⁺	24.32	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	Ag ⁺	7.56(1)	ISE	-60.8(Cal)	-59.7	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Ag ⁺	5.29(2)	ISE	~0(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	4.01(1)	ISE	-2.4(Cal)	68.5	25	MeOH, 0.05 M Et ₄ NNO ₃	109
	Pb ²⁺	1.78(2)	ISE	-5.0(Cal)	17.1	25	MeOH, 0.05 M Et ₄ NNO ₃	109
AT ₂ 12C4-1	Tl ⁺	3.87(1)	ISE	-2.9(Cal)	64.1	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Tl ⁺	<3(2)	ISE	-7.7(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	109
	H ⁺	7.00	Pot			25	H ₂ O, 0.1 M LiNO ₃	182
	Cu ²⁺	-1.5 (CuL)	Pot			25	H ₂ O, 0.1 M LiNO ₃ , (Cu ²⁺ + HL ⁺)	182
A ₂ T ₂ 12C4-1	H ⁺	9.13(1)	Pot	-33.9(Cal)	61.1	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	5.04(2)	Pot	-38.1(Cal)	-31.4	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	9.11(1)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
	H ⁺	5.20(2)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
	Ni ²⁺	7.80	Pot			25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	14.21	Pot			25	H ₂ O, 0.5 M KNO ₃	184
	Cu ²⁺	3.41 Pot (CuLOH)	Pot			25	H ₂ O, 0.5 M KNO ₃ , (CuL ²⁺ + OH ⁻)	184
	Cu ²⁺	14.21	Spec	-59.4(Cal)	72.8	25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	2.79 (CuLOH)	Pot			25	H ₂ O, 0.5 M KNO ₃ , (CuL ²⁺ + OH ⁻)	183
	Cu ⁺	13.14	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
A ₂ T ₂ 12C4-2	Cu ⁺	7.00 Cu(MeCN)HL	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄) ([Cu(MeCN)] ⁺ + HL ⁺)	122, 185
	Cu ²⁺	13.95	Spec/CyVol			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄ - Spec, NaClO ₄ - CyVol)	122, 185
	H ⁺	9.24(1)	Pot	-40.0(Cal)	42.7	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	6.26(1)	Pot	-42.1(Cal)	-21.3	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	9.14(1)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	185
	H ⁺	6.29(2)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	185
	Ni ²⁺	9.07	Pot			25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	12.02	Pot	-39.8(Cal)	96.6	25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	4.76 (CuLOH)	Pot			25	H ₂ O, 0.5 M KNO ₃ , (CuL ²⁺ + OH ⁻)	183
	Cu ²⁺	12.02	Pot			25	H ₂ O, 0.5 M KNO ₃	184
A ₂ T ₂ 12C4-3	Cu ²⁺	1.30 (CuLOH)	Pot			25	H ₂ O, 0.5 M KNO ₃ , (CuL ²⁺ + OH ⁻)	184
	Cu ⁺	12.33	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	185
	Cu ⁺	6.49 Cu(MeCN)HL	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄) ([Cu(MeCN)] ⁺ + HL ⁺)	185
	Cu ²⁺	11.69	Spec/CyVol			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄ - Spec, NaClO ₄ - CyVol)	185
	H ⁺	9.39(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	H ⁺	6.03(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Co ²⁺	4.24	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Co ²⁺	-3.16 (CoLOH)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Co ²⁺ + L + H ₂ O)	186
	Cu ²⁺	12.10	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Cu ²⁺	12.32	Spec			25	H ₂ O, 0.1 M NaClO ₄	186
T ₄ 12C4-1	Ag ⁺	11.15	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Ag ⁺	14.71 (AgHL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Ag ⁺ + L + H ₂ O)	186
	Zn ²⁺	4.87	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Zn ²⁺	-1.78 (ZnLOH)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Zn ²⁺ + L + H ₂ O)	186
	Cd ²⁺	6.59	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Cd ²⁺	-2.16 (CdLOH)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cd ²⁺ + L + H ₂ O)	186
	Pb ²⁺	6.16	Pot			25	H ₂ O, 0.1 M NaClO ₄	186
	Cu ⁺	15.6	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187
	Cu ²⁺	3.37	Spec	-2.64	56.1	25	H ₂ O, 0.01 M ClO ₄ ⁻	188
	Cu ²⁺	3.31	Spec	-3.51	53.1	25	H ₂ O, 0.025 M ClO ₄ ⁻	188
A ₃ 13C3-1	Cu ²⁺	3.39	Spec	-1.26	63.2	25	H ₂ O, 0.05 M ClO ₄ ⁻	188
	Cu ²⁺	3.48	Spec	-2.51	58.6	25	H ₂ O, 0.1 M ClO ₄ ⁻	188
	Cu ²⁺	3.75	Spec	-1.72	65.7	25	H ₂ O, 0.25 M ClO ₄ ⁻	188
	Cu ²⁺	3.96	Spec	-4.69	59.8	25	H ₂ O, 0.5 M ClO ₄ ⁻	188
	Cu ²⁺	4.34	Spec	-8.03	56.1	25	H ₂ O, 1.0 M ClO ₄ ⁻	188
	Cu ²⁺	3.27	Spec	-2.59	54.0	25	H ₂ O, I → 0	188
	Cu ²⁺	3.90	Spec			25?	MeCN·CH ₂ Cl ₂ (1:2/v:v), (anion = ClO ₄ ⁻)	189
	H ⁺	10.98(1)	Pot			20	MeCN-H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	9.50(2)	Pot			20	MeCN-H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
	H ⁺	0.9(3)	NMR			20	MeCN-H ₂ O, I = 0.2 (Na ₂ SO ₄)	58
A ₃ 13C3-2	Cu ⁺	7.56 CuL or Cu(MeCN)L	Pot			20	MeCN-H ₂ O, I = 0.2 (Na ₂ SO ₄) ([Cu(MeCN)] ⁺ + L)	58
	Cu ⁺	4.43 Cu(MeCN)HL	Pot			20	MeCN-H ₂ O, I = 0.2 (Na ₂ SO ₄) ([Cu(MeCN)] ⁺ + HL ⁺)	58
	H ⁺	13.15(1)	NMR			25	H ₂ O, 0.5 M KNO ₃	83
A ₃ 13C3-2	H ⁺	7.97(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	83
	H ⁺	9.79(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T_f , °C	conditions ^c	ref
	H ⁺	8.13(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
	H ⁺	4.18(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
	H ⁺	12.2(1)	NMR			20	MeCN·H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	8.79(2)	Pot			20	MeCN·H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	H ⁺	4.76(3)	Pot			20	MeCN·H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	58
	Cu ²⁺	13.16(1)	Spec			25	H ₂ O, 0.5 M KNO ₃	83
	Cu ²⁺	7.68(2)	Spec			25	H ₂ O, 0.5 M KNO ₃	83
	Cu ²⁺	13.23	Spec			25	H ₂ O, 0.5 M KNO ₃	
		(CuLOH) ₂					(2 CuL ²⁺ + 2OH ⁻)	83
	Cu ⁺	8.14	Pot			20	MeCN·H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	
		Cu(MeCN)L					((Cu(MeCN)) ₂) ⁺ + L ⁺)	58
	Cu ⁺	3.76	Pot			20	MeCN·H ₂ O, $I = 0.2$ (Na ₂ SO ₄)	
		Cu(MeCN)HL or Cu(MeCN) ₂ HL					((Cu(MeCN)) ₂) ⁺ + HL ⁺)	58
B13C4-1	Li ⁺	1.26	Cal	-5.15	6.9	25	MeOH	131
B ₂ 13C4-1	H ⁺	3.69	Pot			25?	H ₂ O	192
	H ⁺	7.84	Pot	-5.44	167	25	Diox·H ₂ O (7:3/v:v)	193
	H ⁺	7.87	Pot		167	35	Diox·H ₂ O (7:3/v:v)	193
A ₂ 13C4-1	H ⁺	10.36(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 194
	H ⁺	6.62(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 194
	Ni ²⁺	5.83	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Cu ²⁺	8.39	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 194
	Zn ²⁺	4.89	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 194
	Cd ²⁺	5.40	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Hg ²⁺	13.30	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Pb ²⁺	5.70	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
A ₂ 13C4-2	H ⁺	11.6	Cal	-55.69	36.3	25	H ₂ O	44
	Mg ²⁺	4.2	Cal	6.55	102	25	H ₂ O	44, 45
	Ca ²⁺	3.5	Cal	-2.50	57.8	25	H ₂ O	44, 45
	Sr ²⁺	2.6	Cal	-0.95	46.8	25	H ₂ O	44, 45
	Ba ²⁺	2.5	Cal	-1.40	43.3	25	H ₂ O	44, 45
A ₃ 13C4-1	H ⁺	10.35(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	H ⁺	8.64(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	H ⁺	2.78(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Ni ²⁺	11.90	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Cu ²⁺	16.92	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 195
	Zn ²⁺	9.94	Pot			25	H ₂ O, 0.1 M NaNO ₃	50, 195
	Cd ²⁺	9.09	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Hg ²⁺	18.05	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
	Pb ²⁺	8.68	Pot			25	H ₂ O, 0.1 M NaNO ₃	50
A ₄ 13C4-1	H ⁺	10.91(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155, 196
	H ⁺	9.91(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155, 196
	H ⁺	~1.6(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155, 196
	H ⁺	~0.9(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155, 196
	Co ²⁺	14.28	Pot			35	H ₂ O, 0.2 M NaClO ₄	155, 196
	Ni ²⁺ (H) ^d		Cal	-83.7		25	H ₂ O	158
	Ni ²⁺ (L) ^d		Cal	-52.3		25	H ₂ O	158
	Ni ²⁺	17.98	Pot			25	H ₂ O, 0.1 M NaNO ₃	160
	Cu ²⁺		Cal	-107		25	H ₂ O	197
	Cu ²⁺	24.36	Spec			25	H ₂ O, $I = 0.5$ (NaNO ₃ + HNO ₃)	162
	Zn ²⁺	15.74	Pot	-64.0(Cal)	86.6	25	H ₂ O, 0.5 M KNO ₃	198
	Cd ²⁺	12.71	Pot			25	H ₂ O, 0.1 M NaNO ₃	162
	Pb ²⁺	13.48	Pot			25	H ₂ O, 0.1 M NaNO ₃	162
A ₄ 13C4-2	H ⁺	11.53(1)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	10.10(2)	Pot			25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-3	H ⁺	<2.5(3)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	11.57(1)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	9.91(2)	Pot			25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-4	H ⁺	<2.5(3)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	11.40(1)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	9.61(2)	Pot			25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-5	H ⁺	<2.5(3)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	11.53(1)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	8.10(2)	Pot			25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-6	H ⁺	<2.5(3)	Pot			25	H ₂ O, 0.5 M KCl	199
	H ⁺	11.22(1)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	9.18(2)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	4.59(3)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	3.28(4)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	11.35(1)	Pot	-33.5(Cal)	105	25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	9.734(2)	Pot	-29.3	88	25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	4.157(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	3.323(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	13.36	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	7.58(BeHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	2.41(BeH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Mg ²⁺	7.62	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Mg ²⁺	2.781(MgHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ca ²⁺	10.4	Pot			20	H ₂ O, 0.1 M KCl	153
	Ca ²⁺	12.085	Pot	-25.5(Cal)	146	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ca ²⁺	5.451(CaHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Sr ²⁺	8.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Sr ²⁺	9.995	Pot	-14.6(Cal)	142	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Sr ²⁺	3.688(SrHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ba ²⁺	8.342	Pot	-13.0(Cal)	117	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ba ²⁺	3.641(BaHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Co ²⁺	20.10	Pot	-34.3(Cal)	268	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Co ²⁺	12.73(CoHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Co ²⁺	6.17(CoH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	$T, ^\circ\text{C}$	conditions ^c	ref
	Ni ²⁺	20.821	Pot	-41.0(Cal)	259	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	13.639(NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	7.175(NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	21.53	Pot	-56.9(Cal)	222	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	14.03(CuHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	7.21(CuH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Zn ²⁺	19.42	Pot	-35.1(Cal)	255	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Zn ²⁺	12.138(ZnHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Zn ²⁺	5.56(ZnH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
A ₄ 13C4-7	H ⁺	11.47(1)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	9.63(2)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	4.55(3)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	3.80(4)	Pot			20	H ₂ O, 0.1 M KCl	153
	Mg ²⁺	7.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Ca ²⁺	11.9	Pot			20	H ₂ O, 0.1 M KCl	153
	Sr ²⁺	9.7	Pot			20	H ₂ O, 0.1 M KCl	153
	Ba ²⁺	8.0	Pot			20	H ₂ O, 0.1 M KCl	153
	Mn ²⁺	16.4	Pot			20	H ₂ O, 0.1 M KCl	153
	Co ²⁺	17.4	Pot			20	H ₂ O, 0.1 M KCl	153
	Ni ²⁺	17.2	Pot			20	H ₂ O, 0.1 M KCl	153
	Cu ²⁺	18	Pot			20	H ₂ O, 0.1 M KCl	153
	Zn ²⁺	16.6	Pot			20	H ₂ O, 0.1 M KCl	153
	Cd ²⁺	17.8	Pot			20	H ₂ O, 0.1 M KCl	153
	Pb ²⁺	17.8	Pot			20	H ₂ O, 0.1 M KCl	153
A ₄ 13C4-8	H ⁺	10.25(1)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	8.50(2)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	5.72(3)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	3.96(4)	Pot			20	H ₂ O, 0.1 M KCl	153
	Mg ²⁺	4.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Ca ²⁺	4.3	Pot			20	H ₂ O, 0.1 M KCl	153
	Sr ²⁺	3.7	Pot			20	H ₂ O, 0.1 M KCl	153
	Ba ²⁺	3.3	Pot			20	H ₂ O, 0.1 M KCl	153
	Co ²⁺	7.3	Pot			20	H ₂ O, 0.1 M KCl	153
	Cu ²⁺	8.3	Pot			20	H ₂ O, 0.1 M KCl	153
	Zn ²⁺	7.1	Pot			20	H ₂ O, 0.1 M KCl	153
	Cd ²⁺	6.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Pb ²⁺	8.1	Pot			20	H ₂ O, 0.1 M KCl	153
A ₄ 13C4-9	H ⁺	10.96(1)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	9.35(2)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	5.12(3)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	3.28(4)	Pot			20	H ₂ O, 0.1 M KCl	153
	Mg ²⁺	6.4	Pot			20	H ₂ O, 0.1 M KCl	153
	Ca ²⁺	8.3	Pot			20	H ₂ O, 0.1 M KCl	153
	Sr ²⁺	6.6	Pot			20	H ₂ O, 0.1 M KCl	153
	Ba ²⁺	5.9	Pot			20	H ₂ O, 0.1 M KCl	153
	Mn ²⁺	9.2	Pot			20	H ₂ O, 0.1 M KCl	153
	Co ²⁺	13.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Cu ²⁺	15.5	Pot			20	H ₂ O, 0.1 M KCl	153
	Zn ²⁺	13.2	Pot			20	H ₂ O, 0.1 M KCl	153
	Cd ²⁺	13.0	Pot			20	H ₂ O, 0.1 M KCl	153
	Pb ²⁺	13.6	Pot			20	H ₂ O, 0.1 M KCl	153
A ₄ 13C4-10	H ⁺	11.54(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	10.31(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	8.71(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	<2(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
A ₄ 13C4-11	H ⁺	13.8(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	12.4(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	9.02(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	7.54(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	6.22(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	5.09(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	19.34	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	(MgHL)					(Mg ²⁺ + L + H ⁺)	172
	Mg ²⁺	30.42	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	(MgH ₂ L)					(Mg ²⁺ + L + 2H ⁺)	172
	Mg ²⁺	38.86	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	(MgH ₃ L)					(Mg ²⁺ + L + 3H ⁺)	172
	Mg ²⁺	45.43	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	(MgH ₄ L)					(Mg ²⁺ + L + 4H ⁺)	172
	Mg ²⁺	11.38	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Mg ²⁺	(Mg ₂ L)					(2Mg ²⁺ + L)	172
	Ca ²⁺	30.23	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	(CaH ₂ L)					(Ca ²⁺ + L + 2H ⁺)	172
	Ca ²⁺	38.72	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	(CaH ₃ L)					(Ca ²⁺ + L + 3H ⁺)	172
	Ca ²⁺	45.26	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	(CaH ₄ L)					(Ca ²⁺ + L + 4H ⁺)	172
	Ca ²⁺	15.90	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	(Ca ₂ L)					(2Ca ²⁺ + L)	172
	Ca ²⁺	24.74	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Ca ²⁺	(Ca ₂ HL)					(2Ca ²⁺ + L + H ⁺)	172
	Sr ²⁺	19.39	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Sr ²⁺	(SrHL)					(Sr ²⁺ + L + H ⁺)	172
	Sr ²⁺	28.72	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Sr ²⁺	(SrH ₂ L)					(Sr ²⁺ + L + 2H ⁺)	172
	Sr ²⁺	37.33	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	Sr ²⁺	(SrH ₃ L)					(Sr ²⁺ + L + 3H ⁺)	172

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
	Sr ²⁺	12.95 (Sr ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (2Sr ²⁺ + L)	172
	Sr ²⁺	22.76 (Sr ₂ HL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (2Sr ²⁺ + L + H ⁺)	172
	Ba ²⁺	19.24 (BaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + H ⁺)	172
	Ba ²⁺	28.94 (BaH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + 2H ⁺)	172
	Ba ²⁺	12.61 (Ba ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (2Ba ²⁺ + L)	172
CHART IV								
K ₂ A ₄ 13C4-1	H ⁺	8.78(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201
	H ⁺	4.12(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201
	H ⁺	9.05(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202, 203
	H ⁺	3.82(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202, 203
	H ⁺	9.05(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	3.82(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	-9.64 (CoH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Co ²⁺ + L)	196
	Ni ²⁺	-6.05 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ pH 9.50, (Ni ²⁺ + L)	202 178
	Cu ²⁺	7.73 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cu ²⁺ + H ₂ L)	201
	Cu ²⁺	-2.02 (CuL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cu ²⁺ + H ₂ L)	201
K ₂ A ₄ 13C4-2	Cu ²⁺	-2.22 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	Cu ²⁺	-2.2 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	203
	H ⁺	9.11(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	3.79(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
K ₂ A ₄ 13C4-3	Ni ²⁺	-6.50 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-3.66 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	H ⁺	9.09(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	5.57(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	3.89(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
K ₂ A ₄ 13C4-4	Ni ²⁺	-7.11 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-3.34 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	H ⁺	8.78(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	5.28(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	-9.15 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
T ₄ 13C4-1	Cu ²⁺	-6.21 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	Cu ⁺	14.8	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187
	Cu ²⁺	3.23	Spec	-8.03	34.7	25	H ₂ O, 0.01 M ClO ₄ ⁻	188
	Cu ²⁺	3.28	Spec	-8.95	32.7	25	H ₂ O, 0.025 M ClO ₄ ⁻	188
	Cu ²⁺	3.35	Spec	-9.16	33.3	25	H ₂ O, 0.05 M ClO ₄ ⁻	188
	Cu ²⁺	3.41	Spec	-10.6	29.4	25	H ₂ O, 0.1 M ClO ₄ ⁻	188
	Cu ²⁺	3.60	Spec	-11.5	30.3	25	H ₂ O, 0.25 M ClO ₄ ⁻	188
	Cu ²⁺	3.84	Spec	-13.7	27.7	25	H ₂ O, 0.5 M ClO ₄ ⁻	188
	Cu ²⁺	4.25	Spec	-20.4	13.3	25	H ₂ O, 1.0 M ClO ₄ ⁻	188
	Cu ²⁺	3.15	Spec	-6.23	39.3	25	H ₂ O, $I > 0$	188
A ₂ 13C5-1	Cu ²⁺	4.13	Spec			25?	MeCN-CH ₂ Cl ₂ (1:2/v:v), (anion = ClO ₄ ⁻)	189
	Co ²⁺	<0.5	Cal	nm		25	Me ₂ SO	204
	Ni ²⁺	<0.5	Cal	nm		25	Me ₂ SO	204, 205
A ₃ 14C3-1	Cu ²⁺	<0.5	Cal	nm		25	Me ₂ SO	204, 205
	Cu ²⁺	1.08	Kin			25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.025-0.5 M HNO ₃)	85a
B ₁₄ C4-1	K ⁺	4.97	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Rb ⁺	3.84	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Cs ⁺	<3.30	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
B ₂ 14C4-1	Li ⁺	~0	NMR			26	DMF	207
	Li ⁺	~4.5	NMR			26	MeCN	207
	Li ⁺	3.15	NMR			26	Me ₂ CO	207
	Li ⁺	~0	NMR			26	Me ₂ SO	207
	Li ⁺	3.60	NMR	-12.8		26	PC	207
	Li ⁺	1.97	NMR			26	Py	207
	Li ⁺	1.85	NMR			26	THF	207
B ₂ 14C4-2	H ⁺	4.36	Pot			25?	H ₂ O	192
	H ⁺	7.80	Pot	-5.44	167	25	Diox-H ₂ O (7:3/v:v)	193
	H ⁺	7.83	Pot		167	35	Diox-H ₂ O (7:3/v:v)	193
B ₂ 14C4-3	Li ⁺	~0	NMR			26	DMF	207
	Li ⁺	~5.0	NMR			26	MeCN	207
	Li ⁺	4.06	NMR			26	Me ₂ CO	207
	Li ⁺	~0	NMR			26	Me ₂ SO	207
	Li ⁺	4.40	NMR	-17.1		26	PC	207
	Li ⁺	2.16	NMR			26	Py	207
	Li ⁺	2.28	NMR			26	THF	207
B ₂ 14C4-4	Li ⁺	~0	NMR			26	DMF	207
	Li ⁺	~5.0	NMR			26	MeCN	207
	Li ⁺	3.97	NMR			26	Me ₂ CO	207

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
B ₂ 14C4-5	Li ⁺	~0	NMR			26	Me ₂ SO	207	
	Li ⁺	4.25	NMR	-15.4		26	PC	207	
	Li ⁺	2.04	NMR			26	Py	207	
	Li ⁺	2.18	NMR			26	THF	207	
	Li ⁺	~0	NMR			26	DMF	207	
	Li ⁺	~4.7	NMR			26	MeCN	207	
	Li ⁺	3.72	NMR			26	Me ₂ CO	207	
	Li ⁺	~0	NMR			26	Me ₂ SO	207	
	Li ⁺	4.25	NMR	-15.0		26	PC	207	
	Li ⁺	2.02	NMR			26	Py	207	
B ₂ 14C4-6 (2,3-Nap)14C4-1	Li ⁺	2.00	NMR			26	THF	207	
	H ⁺	8.44	Pot			25	Diox·H ₂ O (7:3/v:v)	208	
	Na ⁺	0.70	NMR			25?	MeOD·d ₃	209	
	K ⁺	1.18	NMR			25?	MeOD·d ₃	209	
Fur14C4-1	Rb ⁺	1.18	NMR			25?	MeOD·d ₃	209	
	Cs ⁺	1.0	NMR			25?	MeOD·d ₃	209	
	K ⁺	5.59	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	3.74	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
Thio14C4-1	Cs ⁺	3.65	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	K ⁺	6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	4.04	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Cs ⁺	4.23	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
Pyridono14C4-1 A14C4-1	H ⁺	13.71	Pot			25	Diox·H ₂ O (7:3/v:v)	208	
	Na ⁺	1.26	ISE			25	MeOH	210	
B ₂ A ₂ 14C4-1	K ⁺	<1	ISE			25	MeOH	210	
	H ⁺	9.22(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	H ⁺	5.38(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	H ⁺	7.78(1)	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	H ⁺	6.81(2)	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	H ⁺	8.31(1)	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	H ⁺	4.96(2)	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	H ⁺	9.27(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	213	
	H ⁺	5.14(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	213	
	H ⁺	9.2(1)	Pot			25	95% MeOH	214	
	H ⁺	5.4(2)	Pot			25	95% MeOH	214	
	Mn ²⁺	4.0	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	Co ²⁺	5.68	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Co ²⁺	4.5	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	Co ²⁺	~3	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Co ²⁺	~3	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	213	
	Co ²⁺	3.4	Pot			25	95% MeOH, I = 0.1	215, 216	
	Ni ²⁺	6.46	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Ni ²⁺	5.1	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	Ni ²⁺	4.2	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Ni ²⁺	3.43	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	213	
	Ni ²⁺	3.7	Pot			25	95% MeOH	215	
	Cu ²⁺	9.27	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Cu ²⁺	7.6	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212	
	Cu ²⁺	7.60	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Cu ²⁺	7.73	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	213	
	Cu ²⁺	8.2	Pot			25	95% MeOH	215	
	Zn ²⁺	~3.0	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
Zn ²⁺	4.3	Pot			25	50% Diox·H ₂ O, 0.1 M Me ₄ NCl	212		
Zn ²⁺	3.0	Pot			25	95% MeOH	215		
UO ₂ ²⁺	6.5	Pot			25	95% MeOH	214		
B ₂ A ₂ 14C4-2	H ⁺	4.28(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	218	
	H ⁺	1.83(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	218	
	Zn ²⁺	<3.0	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	218	
	Cd ²⁺	<3.0	Pot			25	95% MeOH, 0.1 M Et ₄ NCIO ₄	218	
PyA ₃ 14C4-1 PyA ₃ 14C4-2	Cu ²⁺		Cal	-107		25	H ₂ O	197	
	H ⁺	10.08(1)	Pot			25	H ₂ O, 0.5 M KCl	219	
	H ⁺	9.09(2)	Pot			25	H ₂ O, 0.5 M KCl	219	
PyA ₃ 14C4-3	H ⁺	5.35(3)	Pot			25	H ₂ O, 0.5 M KCl	219	
	H ⁺	10.21(1)	Pot			25	H ₂ O, 0.5 M KCl	219	
	H ⁺	8.92(2)	Pot			25	H ₂ O, 0.5 M KCl	219	
K ₂ PyA ₃ 14C4-1	H ⁺	5.21(3)	Pot			25	H ₂ O, 0.5 M KCl	219	
	H ⁺	7.30(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄		
							(H ⁺ + H ₂ L = H ₃ L ⁺)	177	
	H ⁺	<1.50(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄		
						(H ⁺ + H ₃ L ⁺ = H ₄ L ²⁺)	177		
	Cu ²⁺	-4.64 (CuL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + H ₂ L)	177	
CHART V									
A ₄ 14C4-1	H ⁺	11.54(1)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221	
	H ⁺	10.53(2)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221	
	H ⁺	2.43(3)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221	
	H ⁺	1.97(4)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221	
	H ⁺	11.59(1)	Cal	-51.5	49.0	25	H ₂ O, 0.5 M KNO ₃	222	
	H ⁺	10.63(2)	Cal	-53.4	24.3	25	H ₂ O, 0.5 M KNO ₃	222	
	H ⁺	1.64(3)	Cal	-11.7	-8.37	25	H ₂ O, 0.5 M KNO ₃	222	
	H ⁺	2.41(4)	Cal	-32.2	-32.8	25	H ₂ O, 0.5 M KNO ₃	222	
	H ⁺	11.50(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	10.30(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	11.78(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	H ⁺	10.55(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	H ⁺	<2(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223	
	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	H ⁺	~1.7(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224
	H ⁺	~1.0(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224
	H ⁺	10.8(1)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	10.2(2)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	3.7(3)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	2.5(4)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	11.23(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155
	H ⁺	10.30(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155
	H ⁺	1.5(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155
	H ⁺	~0.8(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155
	H ⁺	11.54(1)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	H ⁺	10.28(2)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	H ⁺	1.8(3)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	H ⁺	1(4)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	Li ⁺	7.04	Polg (anodic wave)			25	MeCN, 0.1 M Et ₄ NClO ₄ , 0.1 M LiClO ₄ titrant	227
	Li ⁺	5.94	Polg (cathodic wave)			25	MeCN, 0.1 M Et ₄ NClO ₄ , 0.1 M Hg(ClO ₄) ₂ titrant	227
	Co ²⁺	12.71	Pot			35	H ₂ O, 0.2 M NaClO ₄	155
	Ni ²⁺	20.3	Pot			25	0.5 M NaCl	228
	Ni ²⁺	19.9	Spec			25	0.5 M NaCl	228
	Cu ²⁺		Cal	-136		25	H ₂ O, pH 14	229
	Cu ²⁺	30.5	Polg			25	H ₂ O, pH > 10	200
	Cu ²⁺	27.94	Pot			15	H ₂ O, 0.2 M NaClO ₄	51
	Cu ²⁺	27.15	Pot	-127	93.7	25	H ₂ O, 0.2 M NaClO ₄	51
	Cu ²⁺	26.44	Pot			35	H ₂ O, 0.2 M NaClO ₄	51
	Cu ²⁺	26.5	Spec			25	H ₂ O, $I = 0.5$ (NaNO ₃ + HNO ₃)	162
	Cu ²⁺	26.51	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	Ag ²⁺	43.4	Polg			25	H ₂ O, $I = 0.2$	230
	Zn ²⁺		Cal	-61.9		25	H ₂ O, pH 14	229
	Zn ²⁺	15.0	Pot	-33.1	176	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	15.34	Pot			25	H ₂ O, 0.5 M KNO ₃	198
	Zn ²⁺	20.12	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	Cd ²⁺	11.23	Pot			25	H ₂ O, 0.1 M NaNO ₃	162
	Hg ²⁺	26.4	Polg			25	MeCN, 0.1 M Et ₄ NClO ₄	227
	Hg ²⁺	25.52	Polg			25	MeCN, 0.1 M Bu ₄ NClO ₄	231
	Pb ²⁺	10.83	Pot			25	H ₂ O, 0.1 M NaNO ₃	162
A ₄ 14C4-2	H ⁺	11.40(1)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	10.35(2)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	2.8(3)	Pot			25	H ₂ O, 0.5 M KCl	232
A ₄ 14C4-3	H ⁺	~2.3(4)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	10.90(1)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	9.90(2)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	3.05(3)	Pot			25	H ₂ O, 0.5 M KCl	232
A ₄ 14C4-4	H ⁺	~2.3(4)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	9.71(1)	Cal	-21.3	115	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	9.32(2)	Cal	-43.1	33.9	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	3.10(3)	Cal	-15.1	8.79	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	2.63(4)	Cal	-28.9	-46.0	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	10.10(1)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	9.35(2)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	3.45(2)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	~2.7(3)	Pot			25	H ₂ O, 0.5 M KCl	232
	H ⁺	9.34(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	H ⁺	8.99(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	H ⁺	2.58(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	H ⁺	2.25(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	Na ⁺	2.7	Polg (anodic wave)			25	MeCN, 0.1 M Et ₄ NClO ₄ , 0.1 M NaClO ₄ titrant	231
	Na ⁺	2.5	Polg (cathodic wave)			25	MeCN, 0.1 M Et ₄ NClO ₄ , 0.1 M Hg(ClO ₄) ₂ titrant	231
	Co ²⁺	10.9	Kin			25	H ₂ O, 0.5 M KNO ₃	234
	Co ²⁺	7.58	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	Ni ²⁺		Cal	5.86	180	25	H ₂ O, 0.5 M KNO ₃ , pH 11 (yellow complex)	235
	Ni ²⁺	NiL(H ₂ O)	Cal	-6.28	139	25	H ₂ O, 0.5 M KNO ₃ , pH 11 (Ni ²⁺ _{aq} + L _{aq})	235
	Ni ²⁺	11.8	Kin			25	H ₂ O, 0.5 M KNO ₃	234
	Ni ²⁺	8.63	Pot			25	H ₂ O, 0.1 M NaNO ₃	236
	Ni ²⁺	8.66	Spec			25	H ₂ O, 0.1 M NaNO ₃	236
	Cu ²⁺	CuL(H ₂ O)	Cal	-56.1	163	25	H ₂ O, 0.5 M KNO ₃ , pH 11 (Cu ²⁺ _{aq} + L _{aq})	235
	Cu ²⁺	17.7	Kin			25	H ₂ O, 0.5 M KNO ₃	234
	Cu ²⁺	18.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	Zn ²⁺	12.2	Kin			25	H ₂ O, 0.5 M KNO ₃	234
	Zn ²⁺	10.4	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	Cd ²⁺	9.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
	Hg ²⁺	20.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	233
A ₄ 14C4-5	H ⁺	10.39(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	9.63(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	8.10(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	3.16(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	237

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T_f , °C	conditions ^c	ref
A ₄ 14C4-6	H ⁺	9.92(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	9.49(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	8.00(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
A ₄ 14C4-7	H ⁺	3.17(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	237
	H ⁺	8.80(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	H ⁺	8.24(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	H ⁺	2.69(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	H ⁺	~1.2(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	H ⁺	8.83(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
	H ⁺	8.30(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
	H ⁺	2.65(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
	Mg ²⁺	1.86	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	Co ²⁺	6.10	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	Co ²⁺	6.85	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
		(CoLOH)					(CoL ²⁺ + OH ⁻)	238
	Ni ²⁺	7.31	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	Ni ²⁺	5.01	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
		(NiLOH)					(NiL ²⁺ + OH ⁻)	238
	Ni ²⁺	7.45	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
							pH 2-10 (Ni ²⁺ + L)	239
	Ni ²⁺	-1.42	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
		(NiH ₁ L)					pH 2-10 (Ni ²⁺ + L)	239
	Ni ²⁺	-12.39	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
		(NiH ₂ L)					pH > 10 (Ni ²⁺ + L)	239
	Pd ²⁺	18.32	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
	Cu ²⁺	15.69	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
	Cu ²⁺	v.small	Pot			25	H ₂ O, 0.1 M NaNO ₃	238
		(CuLOH)					(CuL ²⁺ + OH ⁻)	238
	Cu ²⁺	16.20	Pot			25	H ₂ O, 0.1 M NaClO ₄	239
Zn ²⁺	6.43	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
Zn ²⁺	7.32	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
	(ZnLOH)					(ZnL ²⁺ + OH ⁻)	238	
Cd ²⁺	9.38	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
Cd ²⁺	4.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
	(CdLOH)					(CdL ²⁺ + OH ⁻)	238	
Hg ²⁺	17.94	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
Pb ²⁺	6.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
Pb ²⁺	~5.1	Pot			25	H ₂ O, 0.1 M NaNO ₃	238	
	(PbLOH)					(PbL ²⁺ + OH ⁻)	238	
A ₄ 14C4-8	H ⁺	10.10(1)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	10.05(2)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	9.41(3)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	9.00(4)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	6.08(5)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	4.84(6)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	H ⁺	1.8(7)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	Cu ²⁺	18.97(CuH ₂ L)	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
	Cu ²⁺	32.1	Pot			25	H ₂ O, 0.5 M NaNO ₃	240
		(Cu ₂ L)					(2Cu ²⁺ + L)	240
	Cu ²⁺	4.1	Spec			25	H ₂ O, 0.5 M NaNO ₃	240
	(Cu ₂ LOH)					(Cu ₂ L ⁴⁺ + OH ⁻)	240	
A ₄ 14C4-10	H ⁺	10.95(1)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	10.31(2)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	4.41(3)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	3.66(4)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	11.07(1)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	9.75(2)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	4.31(3)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	3.46(4)	Pot			20	H ₂ O, 0.1 M KCl	165
	H ⁺	10.682(1)	Pot	-34.3(Cal)	92	25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	10.136(2)	Pot	-27.2(Cal)	105	25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	4.091(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	H ⁺	3.347(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Na ⁺	0.4	Pot			25	H ₂ O, 0.1 M KNO ₃	166
	K ⁺	nm	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	13.38	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	7.82(BeHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Be ²⁺	2.47(BeH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Mg ²⁺	1.967	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Mg ²⁺	1.743(MgHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ca ²⁺	8.322	Pot	-8.8(Cal)	130	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ca ²⁺	5.09(CaHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Sr ²⁺	5.728	Pot	8.8(Cal)	138	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Sr ²⁺	3.987(SrHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ba ²⁺	3.854	Pot	10.5(Cal)	109	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ba ²⁺	2.519(BaHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Nd ³⁺	14.51	Pot			80	H ₂ O, 1.0 M NaCl	169
	Nd ³⁺	4.56	Pot			80	H ₂ O, 1.0 M NaCl	169
		(NdHL)					(NdL ³⁺ + H ⁺)	169
	Sm ³⁺	14.97	Pot			80	H ₂ O, 1.0 M NaCl	169
	Sm ³⁺	3.90	Pot			80	H ₂ O, 1.0 M NaCl	169
	(SmHL)					(SmL ³⁺ + H ⁺)	169	
Eu ³⁺	15.46	Pot			80	H ₂ O, 1.0 M NaCl	169	
Eu ³⁺	3.77	Pot			80	H ₂ O, 1.0 M NaCl	169	
	(EuHL)					(EuL ³⁺ + H ⁺)	169	
Gd ³⁺	15.75	Pot			80	H ₂ O, 1.0 M NaCl	169	
Gd ³⁺	3.75	Pot			80	H ₂ O, 1.0 M NaCl	169	
	(GdHL)					(GdL ³⁺ + H ⁺)	169	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref
	Dy ³⁺	16.04	Pot			80	H ₂ O, 1.0 M NaCl	169
	Dy ³⁺	3.10 (DyHL)	Pot			80	H ₂ O, 1.0 M NaCl (DyL ³⁺ + H ⁺)	169
	Er ³⁺	16.49	Pot			80	H ₂ O, 1.0 M NaCl	169
	Er ³⁺	3.50 (ErHL)	Pot			80	H ₂ O, 1.0 M NaCl (ErL ³⁺ + H ⁺)	169
	Yb ³⁺	16.55	Pot			80	H ₂ O, 1.0 M NaCl	169
	Yb ³⁺	2.44 (YbHL)	Pot			80	H ₂ O, 1.0 M NaCl (YbL ³⁺ + H ⁺)	169
	Co ²⁺	16.557	Pot	-19.2(Cal)	255	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Co ²⁺	9.949(CoHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Co ²⁺	2.63(CoH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	19.91	Pot	-37.7(Cal)	255	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	13.35(NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	6.52(NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ni ²⁺	3.10(Ni ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	21.60	Pot	-54.0(Cal)	233	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	14.60(CuHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Cu ²⁺	7.36(CuH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
	Ag ²⁺	39.3	Polg			25	H ₂ O, I = 0.2	230
	Zn ²⁺	16.27	Pot	-15.5(Cal)	259	25	H ₂ O, 0.1 M KNO ₃	166, 167
	Zn ²⁺	9.84(ZnHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	166, 167
A ₄ 14C4-11	H ⁺	13.4(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	12.8(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	8.82(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	7.75(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	6.25(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	5.42(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	172
	H ⁺	13.5(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	12.8(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	11.8(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	9.16(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	7.67(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	6.27(6)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	7.96(7)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	H ⁺	<2(8)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Mg ²⁺	< 1	Pot			25	H ₂ O, 1.0 M KNO ₃	11
	Mg ²⁺	19.07 (MgHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Mg ²⁺ + L + H ⁺)	172
	Mg ²⁺	30.35 (MgH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Mg ²⁺ + L + 2H ⁺)	172
	Mg ²⁺	38.48 (MgH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Mg ²⁺ + L + 3H ⁺)	172
	Mg ²⁺	45.43 (MgH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Mg ²⁺ + L + 4H ⁺)	172
	Ca ²⁺	< 1	Pot			25	H ₂ O, 1.0 M KNO ₃	11
	Ca ²⁺	19.33 (CaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + H ⁺)	172
	Ca ²⁺	30.18 (CaH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + 2H ⁺)	172
	Ca ²⁺	38.32 (CaH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + 3H ⁺)	172
	Ca ²⁺	45.18 (CaH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + 4H ⁺)	172
	Sr ²⁺	< 1	Pot			25	H ₂ O, 1.0 M KNO ₃	11
	Sr ²⁺	18.61 (SrHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + H ⁺)	172
	Sr ²⁺	29.64 (SrH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + 2H ⁺)	172
	Sr ²⁺	37.86 (SrH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + 3H ⁺)	172
	Sr ²⁺	45.10 (SrH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + 4H ⁺)	172
	Ba ²⁺	< 1	Pot			25	H ₂ O, 1.0 M KNO ₃	11
	Ba ²⁺	18.75 (BaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + H ⁺)	172
	Ba ²⁺	29.64 (BaH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + 2H ⁺)	172
	Ba ²⁺	37.90 (BaH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + 3H ⁺)	172
	Ba ²⁺	45.43 (BaH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + 4H ⁺)	172
	Nd ³⁺	17.8	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Nd ³⁺	16.1(NdHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Nd ³⁺	14.6(NdH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Nd ³⁺	12.8(NdH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Eu ³⁺	18.9	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Eu ³⁺	17.1(EuHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Eu ³⁺	15.3(EuH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Eu ³⁺	12.9(EuH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Mn ²⁺	10.8	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Mn ²⁺	10.0(MnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Mn ²⁺	8.2(MnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Mn ²⁺	5.6(MnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Co ²⁺	15.3	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Co ²⁺	13.6(CoHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Co ²⁺	10.9(CoH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Co ²⁺	7.1(CoH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Co ²⁺	7.10 (Co ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CoL ²⁺)	73
	Co ²⁺	22.4 (Co ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Co ²⁺ + L)	73
	Co ²⁺	5.91 (Co ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Co ²⁺ + CoHL ³⁺)	73
	Co ²⁺	19.5 (Co ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Co ²⁺ + HL ⁺)	73
	Ni ²⁺	15.6	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Ni ²⁺	13.3(NiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Ni ²⁺	10.8(NiH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Ni ²⁺	7.1(NiH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cu ²⁺	26.6	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cu ²⁺	24.7(CuHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cu ²⁺	21.6(CuH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cu ²⁺	17.4(CuH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cu ²⁺	9.80 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuL ²⁺)	73
	Cu ²⁺	36.4 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + L)	73
	Cu ²⁺	6.50 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Cu ²⁺ + CuHL ³⁺)	73
	Cu ²⁺	31.3 (Cu ₂ HL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (2Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Be ²⁺	ppt	Pot			25	H ₂ O, 1.0 M KNO ₃	73
	Cu ²⁺ , Mn ²⁺	7.50 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Mn ²⁺	34.1 (CuMnL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Mn ²⁺	5.03 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Mn ²⁺	29.7 (CuMnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Mn ²⁺ + Cu ²⁺ + HL ⁺)	73
	Cu ²⁺ , Ni ²⁺	6.88 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuL ²⁺)	73
	Cu ²⁺ , Ni ²⁺	33.5 (CuNiL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + L)	73
	Cu ²⁺ , Ni ²⁺	3.41 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + CuHL ³⁺)	73
	Cu ²⁺ , Ni ²⁺	28.1 (CuNiHL)	Pot			25	H ₂ O, 1.0 M KNO ₃ (Ni ²⁺ + Cu ²⁺ + HL ⁺)	73
	Zn ²⁺	17.6	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Zn ²⁺	16.2(ZnHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Zn ²⁺	13.7(ZnH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Zn ²⁺	9.6(ZnH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cd ²⁺	16.7	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cd ²⁺	15.1(CdHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cd ²⁺	13.0(CdH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Cd ²⁺	9.9(CdH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Pb ²⁺	15.5	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Pb ²⁺	13.9(PbHL)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Pb ²⁺	12.1(PbH ₂ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
	Pb ²⁺	9.2(PbH ₃ L)	Pot			25	H ₂ O, 1.0 M KNO ₃	241
A ₄ 14C4-12	Li ⁺	2.2	Cond			25	EtOH·CHCl ₃ (1:1)	173
	Li ⁺	4.7	Cond			25	THF·CHCl ₃ (4:1)	173
	Na ⁺	3.8	Cond			25	THF·CHCl ₃ (4:1)	173
	K ⁺	3.0	Cond			25	THF·CHCl ₃ (4:1)	173
	Cs ⁺	2.3	Cond			25	THF·CHCl ₃ (4:1)	173
	MgI ⁺	2.1	Cond			25	EtOH·CHCl ₃ (1:1) (anion = I ⁻)	173
	CaI ⁺	2.4	Cond			25	EtOH·CHCl ₃ (1:1) (anion = I ⁻)	173
A ₄ 14C4-13	Li ⁺	3.7	Cond			25	EtOH·CHCl ₃ (1:1)	173
	Li ⁺	6.2	Cond			25	THF·CHCl ₃ (4:1)	173
	Na ⁺	5.9	Cond			25	THF·CHCl ₃ (4:1)	173
	K ⁺	4.9	Cond			25	THF·CHCl ₃ (4:1)	173
	Cs ⁺	4.1	Cond			25	THF·CHCl ₃ (4:1)	173
	MgI ⁺	3.6	Cond			25	EtOH·CHCl ₃ (1:1) (anion = I ⁻)	173
	CaI ⁺	3.1	Cond			25	EtOH·CHCl ₃ (1:1) (anion = I ⁻)	173
A ₄ 14C4-14	H ⁺	11.46(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	242
	H ⁺	9.28(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	242
	H ⁺	4.49(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	242
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	242
	Cu ²⁺	1.67 (Cu ₂ L)	Pot			25	H ₂ O, 0.5 M KNO ₃ (CuL ²⁺ + Cu ²⁺)	242
	Cu ²⁺	4.45 (CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (CuL ²⁺ + H ⁺)	242
A ₄ 14C4-15	H ⁺	11.20(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.24(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.1(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	12.04	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 14C4-16	H ⁺	11.02(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.14(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.7(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
A ₄ 14C4-17	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	11.00	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.64(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.04(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	3.3(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 14C4-18	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	10.64	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.64(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.00(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.9(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 14C4-19	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	10.15	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.63(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	9.86(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.5(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 14C4-20	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	9.28	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	10.65(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	9.76(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.6(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 14C4-21	H ⁺	~1(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	9.51	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	11.30(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	10.94(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	10.26(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Na ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	K ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Mg ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
A ₄ 14C4-22	Ca ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	H ⁺	11.75(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	10.84(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	8.86(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	<2(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	Fe ²⁺	14.8	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
		(FeH ₁ L)					Fe ²⁺ + H ₁ L	190, 200
	Cu ²⁺	29.4	Polg			25	H ₂ O, pH > 10	200
	Cu ²⁺	32.0	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + H ₁ L)	200
A ₄ 14C4-23	H ⁺	12.0(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	245
	H ⁺	11.16(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	245
	H ⁺	8.99(3)	Pot/Spec			25	H ₂ O, 0.1 M NaClO ₄	245
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	245
A ₄ 14C4-24	H ⁺	<1(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	245
	H ⁺	11.78(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	10.44(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	6.37(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
A ₄ 14C4-25	H ⁺	<2(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	2.901	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
A ₄ 14C4-26	H ⁺	10.96(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	9.41(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	<2(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
A ₄ 14C4-27	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	11.55(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	10.42(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	5.32(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	11.30(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	10.10(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	5.12(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	11.34(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
A ₄ 14C4-28	H ⁺	9.69(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
	H ⁺	<2(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
A ₄ 14C4-29	H ⁺	10.78(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	7.52(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	<2(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
A ₄ 14C4-30	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	11.4(1)	Pot			25	75% MeOH-H ₂ O, 0.1 M NaClO ₄	246
	H ⁺	9.7(2)	Pot			25	75% MeOH-H ₂ O, 0.1 M NaClO ₄	246
	Li ⁺	3.8	Cond			25	THF-CHCl ₃ (4:1/v/v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	Na ⁺	3.6	Cond			25	THF-CHCl ₃ (4:1/v/v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	K ⁺	2.3	Cond			25	THF-CHCl ₃ (4:1/v/v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	Cs ⁺	1.8	Cond			25	THF-CHCl ₃ (4:1/v/v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	Zn ²⁺	12.85	Polg	-58.6	50.2	25	H ₂ O, 0.1 M NaClO ₄ pH 9.5-11	247
	Zn ²⁺		Cal	-59.8		25	H ₂ O, 0.1 M NaClO ₄ pH 9.5-11	248
	Cd ²⁺	10.3	Pot			25	MeOH-H ₂ O (75:25), 0.1 M NaClO ₄	246

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref	
A ₄ 14C4-31	Cd ²⁺	10.2 (Cd ₂ L)	Pot			25	MeOH·H ₂ O (75:25), 0.1 M NaClO ₄	246	
	H ⁺	10.9(1)	Pot			25	MeOH·H ₂ O (75:25), 0.1 M NaClO ₄	246	
	H ⁺	9.4(2)	Pot			25	MeOH·H ₂ O (75:25), 0.1 M NaClO ₄	246	
	Cd ²⁺	9.8	Pot			25	MeOH·H ₂ O (75:25), 0.1 M NaClO ₄	246	
A ₄ 14C4-32	Cd ²⁺	9.2 (Cd ₂ L)	Pot			25	MeOH·H ₂ O (75:25), 0.1 M NaClO ₄	246	
	H ⁺	10.00(1)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	8.35(2)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	5.08(3)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	3.20(4)	Pot			20	H ₂ O, 0.1 M KCl	153	
	Mg ²⁺	2.9	Pot			20	H ₂ O, 0.1 M KCl	153	
	Ca ²⁺	3.1	Pot			20	H ₂ O, 0.1 M KCl	153	
	Sr ²⁺	2.6	Pot			20	H ₂ O, 0.1 M KCl	153	
	Ba ²⁺	2.4	Pot			20	H ₂ O, 0.1 M KCl	153	
	Co ²⁺	6.9	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cu ²⁺	10.2	Pot			20	H ₂ O, 0.1 M KCl	153	
	Zn ²⁺	7.1	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cd ²⁺	6.0	Pot			20	H ₂ O, 0.1 M KCl	153	
	Pb ²⁺	7.3	Pot			20	H ₂ O, 0.1 M KCl	153	
A ₄ 14C4-33	H ⁺	10.3(1)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	9.0(2)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	5.9(3)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	4.1(4)	Pot			20	H ₂ O, 0.1 M KCl	153	
	Mg ²⁺	2.9	Pot			20	H ₂ O, 0.1 M KCl	153	
	Ca ²⁺	3.0	Pot			20	H ₂ O, 0.1 M KCl	153	
	Co ²⁺	7.0	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cu ²⁺	11.1	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	8.22(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224	
	H ⁺	6.70(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224	
A ₄ 14C4-34	H ⁺	<2(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224	
	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224	
	H ⁺	11.29(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	10.19(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	4.52(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	11.05(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	9.98(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	3.3(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	1.0(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	10.81(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	9.74(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	3.03(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	H ⁺	0.9(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	Co ²⁺	10.91	Pot			35	H ₂ O, 0.2 M NaClO ₄	155	
	A ₄ 14C4-35	Cu ²⁺		Cal	-116		25	H ₂ O	197
H ⁺		11.07(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
H ⁺		9.94(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
H ⁺		8.76(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
H ⁺		2.02(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
H ⁺		<2 (5)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
Ni ²⁺		~2.0 (NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (NiL ²⁺ + H ⁺)	249	
Cu ²⁺		1.89 (CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (CuL ²⁺ + H ⁺)	249	
H ⁺		11.22(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
H ⁺		10.13(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
A ₄ 14C4-36	H ⁺	9.32(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	3.79(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	H ⁺	<2 (5)	Pot			25	H ₂ O, 0.5 M KNO ₃	249	
	Ni ²⁺	7.43 (NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (NiL ²⁺ + H ⁺)	249	
	Cu ²⁺	6.17 (CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (CuL ²⁺ + H ⁺)	249	
	H ⁺	10.57(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	9.56(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	4.13(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	~2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	10.92(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	H ⁺	9.40(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	H ⁺	4.62(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	H ⁺	1.6(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	Co ²⁺	11.67	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
A ₄ 14C4-37	Ni ²⁺	14.81	Pot	-53.5	104	25	H ₂ O, 0.5 M KNO ₃ (octahedral complex)	251	
	Ni ²⁺	14.83	Pot			25	H ₂ O, 0.5 M KNO ₃ (planar complex)	251	
	Ni ²⁺	8.32(NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃	251	
	Ni ²⁺	19.3 (NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + H ⁺ + L)	251	
	Ni ²⁺	15.47	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	Zn ²⁺	12.90	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	Cd ²⁺	11.30	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	Pb ²⁺	11.59	Pot			25	H ₂ O, 0.1 M NaNO ₃	250	
	A ₄ 14C4-38	H ⁺	>13.5(1)	NMR			?	D ₂ O	252

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
A ₄ 14C ₄ -diene-1	H ⁺	10.8(2)	NMR			?	D ₂ O	252
	H ⁺	24.9(1)	NMR			?	MeCN·d ₃	252
	Zn ²⁺	15.00	Polg	-55.6(Cal)		25	H ₂ O, 0.1 M NaClO ₄ pH 9.5-11	247, 248
A ₄ 14C ₄ -diene-2	Zn ²⁺	13.00	Polg	-49.4	83.7	25	H ₂ O, 0.1 M NaClO ₄ pH 10-11	247
A ₄ 14C ₄ -diene-3	H ⁺	10.6(1)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	10.1(2)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	H ⁺	<2(3)	Spec			25	H ₂ O, 0.1 M KNO ₃	225
	Cu ²⁺	~20	Spec			25?	H ₂ O, pH 7-9	253
	Zn ²⁺	9.5	Polg	-42.7	37.7	25	H ₂ O, 0.1 M NaClO ₄ pH 9.5-11	254
	Zn ²⁺		Cal	-36.4	62.8	25	H ₂ O, 0.1 M NaClO ₄ pH 9.5-11	248
KA ₄ 14C ₄ -1	H ⁺	9.40(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + HL)	255
	H ⁺	6.65(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₂ L ⁺)	255
	H ⁺	2.87(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (H ⁺ + H ₃ L ²⁺)	255
	H ⁺	10.62(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	7.16(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	3.15(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	nm(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	10.42(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	7.11(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	3.2(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	10.24(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	6.90(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.9(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	1.49	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Co ²⁺ + L)	196
	Ni ²⁺ (L) ^d	(CoH ₁ L) 3.90	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + HL)	255
	Ni ²⁺	(NiL) 4.0	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	(NiH ₁ L) 13.95	Pot			25	H ₂ O, 0.1 M NaClO ₄ pH 4 (Cu ₂ ⁺ + HL)	255
	Cu ²⁺	(CuHL) 8.41	Pot			25	H ₂ O, 0.1 M NaClO ₄ pH 7 (Cu ²⁺ + HL ⁺)	255
	Cu ²⁺	(CuL) 13.00	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	Zn ²⁺	(CuH ₁ L) nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Zn ²⁺	(ZnH ₁ L) 0.59	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
	Zn ²⁺	(ZnH ₂ L) nm	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256	
Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cd ²⁺ + L)	256	
KA ₄ 14C ₄ -2	H ⁺	10.76(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	6.29(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	3.78(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	10.54(1)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	H ⁺	6.06(2)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	H ⁺	3.55(3)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	Ni ²⁺ (H) ^d	8.2	Pot			35	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + L)	257
	Zn ²⁺	(NiH ₁ L) 8.60	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Zn ²⁺	1.28	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
	Zn ²⁺	(ZnH ₁ L) nm	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
	Cd ²⁺	(ZnH ₂ L) 7.15	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Cd ²⁺	-3.47	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cd ²⁺ + L)	256
KA ₄ 14C ₄ -3	H ⁺	10.53(1)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	H ⁺	6.08(2)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	H ⁺	2.5(3)	Pot			35	H ₂ O, 0.1 M NaClO ₄	257
	Ni ²⁺ (L) ^d	6.3	Pot			35	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + L)	257
	Ni ²⁺ (L) ^d	(NiH ₁ L) 6.3	Pot			35	H ₂ O, 0.1 M NaClO ₄ (Ni ²⁺ + L)	257
KA ₄ 14C ₄ -4	H ⁺	11.09(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	9.63(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	6.40(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	2.7(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Zn ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Zn ²⁺	-0.4	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
	Zn ²⁺	(ZnH ₁ L) -9.6	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Zn ²⁺ + L)	256
	Cd ²⁺	(ZnH ₂ L) nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cd ²⁺ + L)	256
	Cd ²⁺	(CdH ₁ L) nm	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cd ²⁺ + L)	256
KA ₄ 14C ₄ -5	H ⁺	10.86(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	7.20(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	5.80(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	H ⁺	2.5(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256	
	Zn ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256	
	Zn ²⁺	-1.7	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(ZnH ₁ L)					(Zn ²⁺ + L)	256	
	Zn ²⁺	-10.1	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(ZnH ₁ L)					(Zn ²⁺ + L)	256	
	Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256	
	Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(CdH ₁ L)					(Cd ²⁺ + L)	256	
CHART VI									
K ₂ A ₄ 14C4-1	H ⁺	9.51(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄		
							(H ⁺ + H ₂ L = H ₃ L ⁺)	258	
	H ⁺	5.80(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄		
							(H ⁺ + H ₃ L ⁺ = H ₄ L ²⁺)	258	
	H ⁺	9.63(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	H ⁺	5.85(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	H ⁺	9.57(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202, 203	
	H ⁺	5.97(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202, 203	
	H ⁺	9.34(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196, 243	
	H ⁺	5.42(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196, 243	
	Co ³⁺	-11.11	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ³⁺ + L)	196	
	Ni ²⁺	-5.15	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					pH 8.30 (Ni ²⁺ + L)	178,202	
	Cu ²⁺	8.75	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + H ₂ L)	258	
	Cu ²⁺	0.44	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(CuL)					(Cu ²⁺ + H ₂ L)	258	
	Cu ²⁺	1.0	Pot			25	H ₂ O, 0.2 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	202, 203	
	Cu ²⁺	0.11	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	224	
K ₂ A ₄ 14C4-2	H ⁺	9.35(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	5.16(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	Co ²⁺	-11.89	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-3	H ⁺	9.32(1)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	H ⁺	5.18(2)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	Co ²⁺	-12.19	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-4	H ⁺	9.35(1)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	H ⁺	5.17(2)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	Co ²⁺	-12.22	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-5	H ⁺	9.37(1)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	H ⁺	5.21(2)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	Co ²⁺	-12.32	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-6	H ⁺	9.34(1)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	H ⁺	5.11(2)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	Co ²⁺	-12.03	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-7	H ⁺	9.37(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	H ⁺	5.65(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224	
	Cu ²⁺	0.49	Pot			25	H ₂ O, 0.1 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	224	
K ₂ A ₄ 14C4-8	H ⁺	10.17(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	9.46(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	5.75(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	Ni ²⁺	-7.15	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					(Ni ²⁺ + L)	243	
K ₂ A ₄ 14C4-9	H ⁺	9.21(1)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	H ⁺	5.21(2)	Pot			35	H ₂ O, 0.1 M KNO ₃	196	
	Co ²⁺	-11.43	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoH ₂ L)					(Co ²⁺ + L)	196	
K ₂ A ₄ 14C4-10	H ⁺	9.69(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	5.81(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	Ni ²⁺	-6.30	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					(Ni ²⁺ + L)	202	
	Cu ²⁺	-1.10	Pot			25	H ₂ O, 0.2 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	202	
K ₂ A ₄ 14C4-11	H ⁺	9.70(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	6.01(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	4.19(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	9.49(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	5.80(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	4.98(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	Ni ²⁺	-5.92	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					(Ni ²⁺ + L)	243	
	Ni ²⁺	-5.94	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					(Ni ²⁺ + L)	202	
	Cu ²⁺	-1.0	Pot			25	H ₂ O, 0.2 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	202	
K ₂ A ₄ 14C4-12	H ⁺	9.45(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	H ⁺	5.34(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202	
	Ni ²⁺	-10.25	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiH ₂ L)					(Ni ²⁺ + L)	202	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
K ₂ A ₄ 14C4-13	Cu ²⁺	-2.34 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	H ⁺	9.22(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	H ⁺	5.18(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223, 224
	Cu ²⁺	2.5 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + L)	223, 224
K ₂ A ₄ 14C4-14	H ⁺	9.56(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
	H ⁺	5.53(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	223
K ₂ A ₄ 14C4-15	H ⁺	6.10(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224
	H ⁺	~1.9(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	224
	Cu ²⁺	0.84 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cu ²⁺ + L)	224
K ₃ A ₄ 14C4-1	H ⁺	8.38	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	8.07	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Ni ²⁺	none	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
K ₃ A ₄ 14C4-2	Cu ²⁺	-9.24 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	H ⁺	7.71	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	none	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-16.34 (CuH ₃ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
K ₃ A ₄ 14C4-3	H ⁺	7.70(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	5.05(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	none	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-16.20 (CuH ₃ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
K ₃ A ₄ 14C4-4	H ⁺	5.43	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	none	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	~18 (CuH ₃ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
	H ⁺	10.79(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
Cy ₂ A ₄ 14C4-1	H ⁺	10.46(2)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	H ⁺	1.9(3)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	H ⁺	1(4)	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	Cu ²⁺	26.46	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
	Zn ²⁺	19.24	Pot			25	K ₂ H ₂ edta solution, 0.1 M KNO ₃	226
B ₂ A ₄ 14C4-1	H ⁺	9.45(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	3.85(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	1.19(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	8.6	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
B ₂ A ₄ 14C4-2	Cd ²⁺	7.75	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
	H ⁺	4.19(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	3.10(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	3.8	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
K ₂ PyT14C4-1	Eu ³⁺ , 3Fod ⁻	1.95	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
K ₂ PyT14C4-2	Eu ³⁺ , 3Fod ⁻	2.48	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
A ₃ T14C4-1	H ⁺	9.66(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	8.24(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	2.53(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	>>18	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
A ₂ T ₂ 14C4-1	H ⁺	9.71(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	6.60(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
A ₂ T ₂ 14C4-2	Cu ²⁺	15.72	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	9.77(1)	Pot	-40.5(Cal)	51.5	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	5.72(2)	Pot	-35.8(Cal)	10.5	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	9.41(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	5.69(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	9.75(1)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
	H ⁺	6.01(2)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
	Ni ²⁺	8.91	Pot			25	H ₂ O, 0.5 M KNO ₃	183
A ₂ T ₂ 14C4-3	Cu ²⁺	13.11	Pot			25	H ₂ O, 0.5 M KNO ₃	184
	Cu ²⁺	15.96	Spec	-66.1(Cal)	83.7	25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	15.26	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	15.85	Spec/CyVol			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄ · Spec, NaClO ₄ · CyVol)	122, 185
	Cu ⁺	13.39	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
	Cu ⁺	7.73 (CuHL)	Pot			20	2% v/v MeCN, I = 0.2 (Na ₂ SO ₄)	122, 185
A ₂ T ₂ 14C4-4	H ⁺	9.78(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	8.16(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	15.15	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
A ₂ T ₂ 14C4-4	H ⁺	9.25(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	183

TABLE I (Continued)

ligand	cation	log <i>K</i> ^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^c	ref
	H ⁺	7.95(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	183
	H ⁺	9.22(1)	Pot			20	2% v/v MeCN, <i>I</i> = 0.2 (Na ₂ SO ₄)	185
	H ⁺	8.00(2)	Pot			20	2% v/v MeCN, <i>I</i> = 0.2 (Na ₂ SO ₄)	185
	Ni ²⁺	8.32	Pot			25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	13.14	Pot	-58.2(Cal)	56.5	25	H ₂ O, 0.5 M KNO ₃	183
	Cu ²⁺	12.89	Spec/CyVol			20	2% v/v MeCN, <i>I</i> = 0.2 (Na ₂ SO ₄ · Spec, NaClO ₄ · CyVol)	185
	Cu ⁺	14.20	Pot			20	2% v/v MeCN, <i>I</i> = 0.2 (Na ₂ SO ₄)	185
	Cu ⁺	9.46 (CuHL)	Pot			20	2% v/v MeCN, <i>I</i> = 0.2 (Na ₂ SO ₄)	185
AT ₃ 14C4-1	H ⁺	8.75	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	9.25	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
T ₄ 14C4-1	Cu ⁺	14.0	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187
	Cu ²⁺	3.02	Spec	-13.1	33.1	25	H ₂ O, <i>I</i> > 0	188
	Cu ²⁺	3.51	Spec			25	MeOH:H ₂ O (4:1), 0.1 M HClO ₄	261
	Hg ²⁺	9.82	Polg			25	MeCN, 0.1 M Bu ₄ NClO ₄	231
T ₄ 14C4-2	Cu ²⁺	4.20	Spec			25	MeOH:H ₂ O (4:1), 0.1 M HClO ₄	261
T ₄ 14C4-3	Cu ²⁺	4.87	Spec			25	MeOH:H ₂ O (4:1), 0.1 M HClO ₄	261
T ₄ 14C4-4	Cu ²⁺	4.69	Spec			25	H ₂ O (anion = 0.1 M ClO ₄ ⁻)	262
	Cu ²⁺	4.34	Spec			25	H ₂ O (anion = 0.1 M NO ₃ ⁻)	262
T ₄ 14C4-5	Cu ²⁺	3.12	Spec			25	H ₂ O (anion = 0.1 M ClO ₄ ⁻)	262
T ₄ 14C4-6	Cu ²⁺	3.89	Spec			25	H ₂ O (anion = 0.1 M ClO ₄ ⁻)	262
T ₄ 14C4-8	Cu ²⁺	3.75	Spec			25?	MeCN·CH ₂ Cl ₂ (1:2/v:v), (anion = ClO ₄ ⁻)	189
14C5-1	Na ⁺	5.1	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
PhosB ₂ 14C6-1	Li ⁺	3.16	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263,264
	Na ⁺	3.04	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	K ⁺	3.26	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	Mg ²⁺	3.53	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	Ca ²⁺	3.99	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
PhosB ₂ 14C6-2	Li ⁺	3.21	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Na ⁺	3.41	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	K ⁺	3.45	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Mg ²⁺	3.42	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Ca ²⁺	3.68	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
PhosB ₂ 14C6-3	Li ⁺	2.87	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	Na ⁺	3.27	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	K ⁺	0.26	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	Mg ²⁺	3.17	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
	Ca ²⁺	3.97	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 264
PhosB ₂ 14C6-4	Li ⁺	2.10	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Na ⁺	2.87	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	K ⁺	1.88	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Mg ²⁺	2.51	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Ca ²⁺	2.98	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
PhosB ₂ 14C6-5	Li ⁺	1.64	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Na ⁺	2.12	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	K ⁺	0.18	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Mg ²⁺	2.13	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
	Ca ²⁺	2.22	Spec			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	264
				Chart VII				
K ₂ Py15C3-1	Eu ³⁺ , 3Fod ⁻	2.23	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89
A ₃ 15C3-1	H ⁺	>11(1)	NMR			25?	20% D ₂ O?	265
	H ⁺	~8(2)	NMR			25?	20% D ₂ O?	265
	H ⁺	~7(3)	NMR			25?	20% D ₂ O?	265
(1,3-B)15C4-1	K ⁺	4.28	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Rb ⁺	3.84	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
(1,3-B)15C4-2	Cs ⁺	<3.30	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	H ⁺	10.8	Spec			20	H ₂ O	266	
	Na ⁺	~0.8	ISE			25	MeOH	267	
	K ⁺	1.26	Cal	-12.5	-74.4	25	MeOH	267	
	K ⁺	1.24	ISE			25	MeOH	267	
(1,3-B)15C4-3	Cs ⁺	1.30	Cal	-11.7	-60.4	25	MeOH	267	
	H ⁺	6.8	Spec			20	H ₂ O	266	
	H ⁺	6.92	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	La ³⁺	2.70	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Ce ³⁺	2.97	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Pr ³⁺	3.00	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Nd ³⁺	2.98	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Sm ³⁺	3.23	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Eu ³⁺	3.28	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Gd ³⁺	3.18	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Tb ³⁺	3.25	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Dy ³⁺	3.22	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Er ³⁺	3.11	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Yb ³⁺	3.07	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Lu ³⁺	3.05	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
(1,3-B)15C4-4	Na ⁺	1.14	Cal	-8.4	-28.1	25	MeOH	267	
	Na ⁺	1.11	ISE			25	MeOH	267	
	K ⁺	1.97	Cal	-19.9	-122.2	25	MeOH	267	
	K ⁺	2.00	ISE			25	MeOH	267	
(1,3-B)15C4-5	Cs ⁺	1.81	Cal	-20.0	-136.2	25	MeOH	267	
	Li ⁺	3.58	Solv Extr-UV			25	CDCl ₃ (anion = picrate)	269	
	Na ⁺	4.15	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	K ⁺	4.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Cs ⁺	3.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	NH ₄ ⁺	3.62	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
(1,3-B)15C4-6	H ⁺	4.8	Pot			22	H ₂ O	270	
	H ⁺	5.31	Pot			25	H ₂ O	123, 271	
	H ⁺	4.8	Pot			22	H ₂ O	272	
(1,3-B)15C4-7	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<2.69	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272	
(1,3-B)15C4-8	H ⁺	2.5	Pot			25	H ₂ O	273	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~<2.18	Solv Extr-PMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270	
(1,3-B)15C4-9	H ⁺	7.05	Spec			25	Diox-H ₂ O (1:9/v/v), <i>I</i> = 0.09-0.24	274, 275	
	H ⁺	7.3	Spec			25	Diox-H ₂ O (1:9)	88	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.53	Spec			25	CHCl ₃	88	
	piperidine ⁺	3.26	Spec			25	CHCl ₃	88	
	H ⁺	8.86(1)	Pot			25	65% EtOH, 0.1 M Me ₄ NClO ₄	213	
	H ⁺	6.36(2)	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	H ⁺	9.85(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	H ⁺	6.78(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	H ⁺	9.8(1)	Pot			25	95% MeOH	214	
	H ⁺	6.8(2)	Pot			25	95% MeOH	214	
	Ce ³⁺	4.62	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
	Nd ³⁺	4.61	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
	Sm ³⁺	4.95	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
	Dy ³⁺	5.43	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
	Er ³⁺	5.67	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
B ₂ A ₂ 15C4-1	Co ²⁺	~3	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Co ²⁺	<3.6	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Co ²⁺	<4.5	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
	Ni ²⁺	4.7	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Ni ²⁺	4.76	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Cu ²⁺	6.8	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Cu ²⁺	7.29	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Ag ⁺	(1)	Cal	-35		30	MeCN	277	
	Ag ⁺	3.17(2)	Cal	-31		30	MeCN	277	
	Zn ²⁺	4.1	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
	UO ₂ ²⁺	11.36	Pot			25	H ₂ O, <i>I</i> = 0.1	276	
	UO ₂ ²⁺	7.4	Pot			25	95% MeOH	214	
	B ₂ A ₂ 15C4-2	H ⁺	10.45(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
		H ⁺	7.85(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
		H ⁺	~1.9(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
Co ²⁺		7.6	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
Ni ²⁺		9.9	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
Cu ²⁺		14.9	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
Zn ²⁺		8.3	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
Zn ²⁺		3.8	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
B ₂ A ₂ 15C4-3	Cd ²⁺	8.4	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	UO ₂ ²⁺	7.01	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280	
B ₂ A ₂ 15C4-diene-1 A ₄ 15C4-1	H ⁺	10.33(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	279, 281	
	H ⁺	9.48(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	279, 281	
	H ⁺	5.71(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	279, 281	
	H ⁺	1.28(4)	Pot			25	H ₂ O, 0.5 M KNO ₃	279, 281	
	H ⁺	9.83(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	282	
	H ⁺	8.95(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	282	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	4.50(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	H ⁺	1.6(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	H ⁺	10.37(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	9.35(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	5.29(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	~2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Co ²⁺	9.85	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Ni ²⁺	11.75	Pot	-47.7(Cal)	64.6	25	H ₂ O, 0.5 M KNO ₃	
	Ni ²⁺	12.07	Pot	-32.2(Cal)	124	25	(octahedral complex) H ₂ O, 0.5 M KNO ₃	281
	Ni ²⁺	18.0 (NiHL)	Pot			25	(planar complex) H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + L + H ⁺)	281
	Ni ²⁺	11.74	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	Cu ²⁺	20.40	Pot	-80.3(Cal)	121	25	H ₂ O, 0.5 M KNO ₃	281
	Cu ²⁺	22.35 (CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + L + H ⁺)	281
	Cu ²⁺	20.40	Pot			25	H ₂ O, 0.5 M KNO ₃	279
	Cu ²⁺	12.02(CuHL)	Pot			25	H ₂ O, 0.5 M KNO ₃	279
	Cu ²⁺	19.25	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	Zn ²⁺	10.70	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	Cd ²⁺	10.18	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
	Pb ²⁺	9.50	Pot			25	H ₂ O, 0.1 M NaNO ₃	282
A ₄ 15C4-2	H ⁺	11.04(1)	Pot	46.4(Cal)	56.0	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	10.47(2)	Pot	51.5(Cal)	28.2	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	3.98(3)	Pot	27.2(Cal)	-15.4	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	3.41(4)	Pot	30.5(Cal)	-36.6	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	10.76(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	9.94(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	3.6(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	1.5(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
A ₄ 15C4-3	Co ²⁺	12.42	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	(1)	Cal	-96.65		25	H ₂ O, 0.1 M KNO ₃	284
	H ⁺	11.09(1)	Cal	-45.2	60.2	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	10.39(2)	Cal	-51.5	26.4	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	5.28(3)	Cal	-30.2	-0.42	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	3.60(4)	Cal	-32.3	-39.3	25	H ₂ O, 0.5 M KNO ₃	222
	H ⁺	11.4(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	10.3(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	11.2(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	10.1(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	~2.0(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	~2.0(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	11.0(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	9.9(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	285
	H ⁺	10.70(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	H ⁺	9.92(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	H ⁺	5.23(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	H ⁺	3.54(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Co ²⁺		Cal	-62.2		25	H ₂ O, 0.1 M KNO ₃	284
	Ni ²⁺ (H) ^d		Cal	-74.9		25	H ₂ O	158
	Ni ²⁺	18.38	Pot			25	H ₂ O, 0.5 M KNO ₃ (octahedral complex)	251
	Ni ²⁺	10.96(NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃	251
	Ni ²⁺	22.04 (NiHL)	Pot			25	H ₂ O, 0.5 M KNO ₃ (Ni ²⁺ + H ⁺ + L)	251
	Cu ²⁺	25.1	Pot			15	H ₂ O, 0.2 M NaClO ₄	285
	Cu ²⁺	24.4	Pot	-111	95.0	25	H ₂ O, 0.2 M NaClO ₄	285
	Cu ²⁺	5.52 (CuHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (CuL ² + H ⁺)	285
	Cu ²⁺	23.7	Pot			35	H ₂ O, 0.2 M NaClO ₄	285
	Zn ²⁺	15.35	Pot			25	H ₂ O, 0.5 M KNO ₃	198
	Cd ²⁺	12.10	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Pb ²⁺	10.12	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
A ₄ 15C4-4	H ⁺	9.62(1)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	8.541(2)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	5.54(3)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	2.815(4)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
A ₄ 15C4-5	H ⁺	10.896(1)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	9.651(2)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	5.52(3)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	3.52(4)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	2.18(5)	NMR			25	D ₂ O, 0.1 M KNO ₃	287
	H ⁺	10.982(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	288
	H ⁺	9.681(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	288
	H ⁺	5.68(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	288
	H ⁺	3.80(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	288
	H ⁺	2.59(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	288
	H ⁺	10.896(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	288
	H ⁺	9.561(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	288
	H ⁺	5.52(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	288
	H ⁺	3.51(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	288
	H ⁺	2.18(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	288
	Ca ²⁺	3.29	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ca ²⁺	2.74 (CaHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Sr ²⁺	2.19	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ba ²⁺	1.75	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Co ²⁺	15.93	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Co ²⁺	4.76 (Co ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Co ²⁺	10.32 (CoHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Co ²⁺	4.57 (CoH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Co ²⁺	3.86 (CoH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ni ²⁺	17.19	Pot	-17.2(Cal)	272	25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ni ²⁺	4.61 (Ni ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ni ²⁺	11.72 (NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ni ²⁺	5.74 (NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Ni ²⁺	3.44 (NiH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Cu ²⁺	19.85	Pot	-46.0(Cal)	226	25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Cu ²⁺	3.95 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Cu ²⁺	14.29 (CuHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Cu ²⁺	7.96 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Zn ²⁺	16.04	Pot	-12.1(Cal)	226	25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Zn ²⁺	4.66 (Zn ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Zn ²⁺	10.64 (ZnHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
	Zn ²⁺	5.14 (ZnH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ or Me ₄ NNO ₃	288
A ₄ 15C4·6	H ⁺	11.74(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	10.21(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	8.76(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	4.77(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
	H ⁺	3.34(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	200
K ₂ A ₄ 15C4·1	H ⁺	9.40(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	203
	H ⁺	6.52(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	203
	Ni ²⁺	-8.92 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ , pH 8.80 (Ni ²⁺ + L)	178, 202
	Cu ²⁺	-4.49 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202, 203
K ₂ A ₄ 15C4·2	H ⁺	9.39(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	6.33(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	-8.65 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-4.43 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
K ₂ A ₄ 15C4·3	H ⁺	9.44(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	6.45(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	H ⁺	5.35(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	202
	Ni ²⁺	-8.94 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	202
	Cu ²⁺	-4.23 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	202
B ₂ A ₄ 15C4·1	H ⁺	9.72(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	4.97(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	2.01(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	8.6	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
	Cd ²⁺	5.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
B ₂ A ₄ 15C4·2	H ⁺	9.69(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	7.19(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	1.88(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	6.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
	Cd ²⁺	4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259
B ₂ A ₄ 15C4·3	H ⁺	9.51(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	7.01(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	6.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Cd ²⁺	3.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
B ₂ A ₄ 15C4·4	H ⁺	9.43(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	7.01(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	H ⁺	1.64(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Zn ²⁺	5.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
	Cd ²⁺	4.1	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218
BA ₂ T ₂ 15C4·1	H ⁺	11.03(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	289
	H ⁺	5.09(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	289
	Cu ²⁺	18.41	Kin			25	H ₂ O, 0.5 M KNO ₃	289
T ₄ 15C4·1	Cu ⁺	13.0	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187

TABLE I (Continued)

ligand	cation	log <i>K</i> ^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^c	ref
CHART VIII								
15C5-1	H ⁺	-0.82	Mac Dist-UV (Pic Anal)			15	H ₂ O, 0.5 M HCl	290
	H ⁺	-0.70	Mac Dist-UV (Pic Anal)			20	H ₂ O, 0.5 M HCl	290
	H ⁺	-0.57	Mac Dist-UV (Pic Anal)	43.6	136	25	H ₂ O, 0.5 M HCl	290
	H ⁺	-0.64	Mac Dist-UV (Pic Anal)			25	H ₂ O, 1.0 M HCl	290
	H ⁺	-0.60	Mac Dist-UV (Pic Anal)			25	H ₂ O, 2.0 M HCl	290
	H ⁺	-0.46	Mac Dist-UV (Pic Anal)			30	H ₂ O, 0.5 M HCl	290
	H ⁺	2.54	Cal	-24.8	-34.9	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93
	H ⁺	3.57(HL ₂)	Cal	-18.9	4.7	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93
	H ₃ O ⁺		Spec	-321.7	-180.7	?	gas-phase ion-molecule equilibria	43
	Li ⁺ ,AsF ₆ ⁻	1.23	Kin			25	1,3-Dioxolane	291
	Li ⁺	2.71	Kin			25	1,3-Dioxolane (anion = ClO ₄ ⁻)	98
	Li ⁺	2.39	NMR			40?	1 mol% LiCl in 45 mol% AlCl ₃ melt	41
	Li ⁺	5.34	Cond			25	MeCN	292
	Li ⁺	1.02	Cond			25	MeOH·H ₂ O (7:3/w/w), (anion = Cl ⁻)	100
	Li ⁺	1.21	Cond			25	MeOH (anion = Cl ⁻)	100
	Li ⁺	4.03	Cal	-20.8	7.0	25	PC	293
	Na ⁺	0.63	NMR			30	DOH (anion = I ⁻)	294
	Na ⁺	0.67	IEM			25	H ₂ O (anion = Cl ⁻)	94
	Na ⁺	1.08	ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295
	Na ⁺	0.04	Ebulliometry			boiling	0.6 molal <i>t</i> -BuOK· <i>t</i> -BuOH	103
	Na ⁺	2.3	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296
	Na ⁺	2.3	Polg			25?	DMF, 0.05 M Et ₄ NI	296
	Na ⁺	2.8	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296
	Na ⁺	2.3	Polg			25?	DMF, 0.05 M Bu ₄ NI	296
	Na ⁺	3.40	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	Na ⁺	0	Ebulliometry			boiling	0.6 molal EtOK·EtOH	103
	Na ⁺	<-0.70	Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103
	Na ⁺	5.38	Cond			25	MeCN	292
	Na ⁺	4.91	ISE	-29.2(Cal)	-44.6	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Na ⁺	4.92	NMR	-24.1	-16.4	25	MeCN	299
	Na ⁺	4.0	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296
	Na ⁺	3.6	Polg			25?	MeCN, 0.05 M Et ₄ NI	296
	Na ⁺	4.3	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296
	Na ⁺	4.2	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296
	Na ⁺	3.68(1)	NMR			25	Me ₂ CO	300
	Na ⁺	1.83(2)	NMR			25	Me ₂ CO	300
	Na ⁺ ,Br ⁻	0.73	NMR	-8.79	-16.3 25		MeNH ₂	301
	Na ⁺	2.95	ISE			25	MeOH·H ₂ O (9:1/w/w)	302
	Na ⁺	2.97	ISE			25	MeOH·H ₂ O (9:1/v/v), (anion = ClO ₄ ⁻)	303, 304
	Na ⁺	2.32	Cond			25	MeOH·H ₂ O (7:3/w/w), (anion = Cl ⁻)	100
	Na ⁺	3.42(1)	Cal	-22.0	-9	25	MeOH	305
	Na ⁺	2.77(2)	Cal	-9.7	20	25	MeOH	305
	Na ⁺		Cal	-23.0	-17.3	25	MeOH	104
	Na ⁺	none	Cond			25	MeOH (anion = Cl ⁻)	100
	Na ⁺	3.23	ISE			25	MeOH	306
	Na ⁺	3.27	ISE			25	MeOH (anhydrous)	303, 307
	Na ⁺	3.31	ISE			25	MeOH	128, 308
	Na ⁺	3.29	ISE	-17.53	4.21	25	MeOH (anhydrous)	309, 310
	Na ⁺	3.3	ISE			25	MeOH	105, 311
	Na ⁺	3.27	Pot			25	MeOH	312
	Na ⁺	3.43(1)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	2.40(2)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	3.39	OSM			25	MeOH	313
	Na ⁺	0.23	Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	Na ⁺	4.87	Cal	-31.9	-14.1	25	PC	293
	Na ⁺	0.30	Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	103
	Na ⁺	1.57	Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	Na ⁺		Cal	-15.1	0.3	25	Py	314
	Na ⁺ ,TCNE ⁻		Spec	-26.4	98.4	-50 to +50	Toluene (TCNE = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-26.0	99.6	-50 to +50	<i>o</i> -Xylene (TCNE = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-27.2	100.0	-50 to +50	<i>m</i> -Xylene (TCNE = tetracyanoethylene)	315
	K ⁺	1.11	NMR			30	DOH (anion = I ⁻)	294
	K ⁺	0.76	IEM			25	H ₂ O (anion = Cl ⁻)	94
	K ⁺	>2.78(1+2)	Ebulliometry			boiling	0.6 molal <i>t</i> -BuOK· <i>t</i> -BuOH	103
	K ⁺	2.9	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296
	K ⁺	2.8	Polg			25?	DMF, 0.05 M Et ₄ NI	296
	K ⁺	3.4	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296
	K ⁺	2.6	Polg			25?	DMF, 0.05 M Bu ₄ NI	296
	K ⁺	5.90	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	K ⁺	0.65(1+2)	Ebulliometry			boiling	0.6 molal EtOK·EtOH	103
	K ⁺	<-0.70 (1+2)	Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	4.33	Cal	-32.0	-24.8	25	MeCN	298
	K ⁺	3.98	Cond			25	MeCN	292
	K ⁺	4.29(1)	ISE	-32.0(Cal)	-25.5	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.75(2)	ISE	-30.1(Cal)	-48.7	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺	4.4	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296
	K ⁺	4.2	Polg			25?	MeCN, 0.05 M Et ₄ NI	296
	K ⁺	4.7	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296
	K ⁺	4.4	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296
	K ⁺	3.00(1)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	2.24(2)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	3.18	ISE			25	MeOH·H ₂ O (9:1)	303
	K ⁺	2.79(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	K ⁺	2.04(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	K ⁺	3.85(1)	Cal	-31.0	-31	25	MeOH	305
	K ⁺	2.48(2)	Cal	-45.3	-105	25	MeOH	305
	K ⁺		Cal	-32.2	-39.3	25	MeOH	104
	K ⁺	3.3	Cond			25	MeOH	292
	K ⁺	3.38(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	2.62(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	3.43	ISE			25	MeOH (anhydrous)	306, 310
	K ⁺	3.34	ISE			25	MeOH	128
	K ⁺	3.60	ISE			25	MeOH	303, 307
	K ⁺	3.36(1)	ISE			25	MeOH	308
	K ⁺	2.62(2)	ISE			25	MeOH	308
	K ⁺	3.3	ISE			25	MeOH	105, 311
	K ⁺	3.86(1)	OSM			25	MeOH	313
	K ⁺	2.21(2)	OSM			25	MeOH	313
	K ⁺	3.63(1)	Polg			25	MeOH	316
	K ⁺	2.45(2)	Polg			25	MeOH	316
	K ⁺	3.60	Pot			25	MeOH	312
	K ⁺	3.35(1)	ISE			25	MeOH	317
	K ⁺	2.62(2)	ISE			25	MeOH	317
	K ⁺	0.78(1+2)	Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	K ⁺	3.78(1)	ISE	-30.5(Cal)	-30.2	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.84(2)	ISE	-29.5(Cal)	-45.0	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	0.93(1+2)	Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	103
	K ⁺	1.66(1+2)	Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	Rb ⁺	3.98	Cal	-28.6	-20.1	25	MeCN	298
	Rb ⁺	3.42	Cond			25	MeCN	292
	Rb ⁺	2.81(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Rb ⁺	1.83(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Rb ⁺	4.07(1)	Cal	-28.3	-7	25	MeOH	305
	Rb ⁺	2.47(2)	Cal	-44.0	-100	25	MeOH	305
	Rb ⁺	2.72	Cond			25	MeOH	292
	Rb ⁺	2.88(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	Rb ⁺	2.32(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	Rb ⁺	3.74	Cal	-26.0	-15.8	25	PC	293
	Cs ⁺	0.79	IEM			25	H ₂ O (anion = Cl ⁻)	94
	Cs ⁺	0.61	NMR			25	DMAC	318
	Cs ⁺	0.91	NMR			25	DMF	318
	Cs ⁺	1.14	NMR			25	Form	318
	Cs ⁺	3.11	Cal	-27.7	-33.6	25	MeCN	298
	Cs ⁺	3.14	Cond			25	MeCN	292
	Cs ⁺	2.49(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻), 0.798 mM CsCl	100
	Cs ⁺	1.48(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻), 0.798 mM CsCl	100
	Cs ⁺	2.22(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻), 1.007 mM CsCl	100
	Cs ⁺	1.35(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻), 1.007 mM CsCl	100
	Cs ⁺	2.10	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Cs ⁺	2.78(1)	Cond			25	MeOH (anion = Cl ⁻), 0.796 mM CsCl	100
	Cs ⁺	1.74(2)	Cond			25	MeOH (anion = Cl ⁻), 0.796 mM CsCl	100
	Cs ⁺	2.81(1)	Cond			25	MeOH (anion = Cl ⁻), 1.001 mM CsCl	100
	Cs ⁺	1.90(2)	Cond			25	MeOH (anion = Cl ⁻), 1.001 mM CsCl	100
	Cs ⁺	2.66	Cond			25	MeOH	292
	Cs ⁺	3.58(1)	Cal	-21.2	-3	25	MeOH	305
	Cs ⁺	2.53(2)	Cal	-21.4	-24	25	MeOH	305
	Cs ⁺	1.89(1)	OSM			25	MeOH	316a
	Cs ⁺	1.2(2)	OSM			25	MeOH	316a
	Cs ⁺	1.03	NMR			25	NMF	318
	Cs ⁺	3.39	Cal	-17.0	7.7	25	PC	293
	Mg ²⁺	2.30	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	-0.086	NMR			18	H ₂ O (anion = Cl ⁻)	320
	Ca ²⁺	-0.305	NMR			18	H ₂ O (anion = NO ₃ ⁻)	320
	Ca ²⁺	none	IEM			25	H ₂ O (anion = Cl ⁻)	94
	Ca ²⁺	2.46	Cal	-26.75	-42.6	25	EtOH (anion = Cl ⁻)	108
	Ca ²⁺	2.06	Cal	-14.67	-9.8	25	EtOH (anion = NO ₃ ⁻)	108
	Ca ²⁺	2.00	Cal	-9.3	7	25	MeOH	305

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ca ²⁺	2.42	Cond			25	MeOH	319
	Ca ²⁺	2.09	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Sr ²⁺	3.20(1)	Cal	-14.5	12	25	MeOH	305
	Sr ²⁺	2.63(2)	Cal	-21.1	-21	25	MeOH	305
	Ba ²⁺	>5	Cal	-40.8		25	MeCN	298
	Ba ²⁺	4.09(1)	Cal	-20.9	8	25	MeOH	305
	Ba ²⁺	2.61(2)	Cal	-38.8	-80	25	MeOH	305
	La ³⁺	6.1	Cal	-7.9	89.5	25	MeCN (anion = NO ₃ ⁻)	321
	La ³⁺	9.2	Cal	-8.8	147.3	25	MeCN (anion = Cl ⁻)	321
	La ³⁺	7.4(1+2)	NMR			25	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	La ³⁺	6.9(1+2)	NMR			-35	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	La ³⁺	>4(1+2)	NMR			-30	MeCN-d ₃ (99.9% D), (anion = ClO ₄ ⁻)	323
	La ³⁺	6.38(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	La ³⁺	4.53(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Ce ³⁺	5.6	Cal	-24.3	25.1	25	MeCN (anion = NO ₃ ⁻)	321
	Pr ³⁺ ,3Fod ⁻	2.64(1)	NMR	-20.8		20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.30(2)	NMR			20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	2.49(1)	NMR	-20.9	-21.4	30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.30(2)	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	2.41(1)	NMR	-21.0		40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺ ,3Fod ⁻	1.30(2)	NMR			40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Pr ³⁺	4.4(1+2)	NMR			25	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Pr ³⁺	4.5(1+2)	NMR			-35	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Pr ³⁺	6.97(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Pr ³⁺	3.31(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Nd ³⁺	3.8(1+2)	NMR			25	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Nd ³⁺	4.1(1+2)	NMR			-35	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Sm ³⁺	4.653	Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Sm ³⁺	3.2(1+2)	NMR			25	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Sm ³⁺	3.2(1+2)	NMR			-35	MeCN-d ₃ , (anion = PF ₆ ⁻)	322
	Sm ³⁺	7.34(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Sm ³⁺	1.94(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Eu ³⁺	5.753	Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Eu ³⁺ ,3Fod ⁻	2.26	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	113
	Eu ³⁺ ,3Fod ⁻	2.06(1)	NMR	87.4		20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	0.98(2)	NMR			20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	2.14(1)	NMR	14.8	90.4	30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	0.99(2)	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	2.20(1)	NMR	90.0		40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ ,3Fod ⁻	1.00(2)	NMR			40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Eu ³⁺ , ³ TTA ⁻	5.12	Solv Extr.			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	325
	Eu ³⁺	(1+2) 5.6	Rad Pot			25	PC, 0.1 M Et ₄ NClO ₄ (anion = CF ₃ SO ₃ ⁻)	326
	Tb ³⁺	7.10	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Er ³⁺	7.50	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Tm ³⁺ ,3TTA ⁻	5.10	Solv Extr.			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	325
	Yb ³⁺	(1+2) 5.222	Rad Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Yb ³⁺ ,3Fod ⁻	1.74(1)	NMR	-53.6		20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ ,3Fod ⁻	1.04(2)	NMR			20	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ ,3Fod ⁻	1.57(1)	NMR	-25.4	-54.0	30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ ,3Fod ⁻	1.05(2)	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ ,3Fod ⁻	1.47(1)	NMR	-53.6		40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ ,3Fod ⁻	1.05(2)	NMR			40	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	112
	Yb ³⁺ , ³ TTA ⁻	5.02	Solv Extr.			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	325
	Yb ³⁺	(1+2) 7.25	Rad Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Lu ³⁺	7.50	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Mn ²⁺	none	Spec			25?	H ₂ O	116
	Co ²⁺ ,2TTA ⁻	3.18	Solv Extr.			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	118
	Co ²⁺	3.62	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Co ²⁺	4.55	Pot	-29.1(Cal)	-10.7	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ni ²⁺	2.32	Cond			25	MeOH	319
	Ni ²⁺	2.59	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Cu ²⁺	2.20	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Cu ²⁺	>6.3	Pot	-65.8(Cal)		25	PC, 0.01 M Et ₄ NClO ₄	117

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ag ⁺	nm	Cal+Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Ag ⁺	3.65	Cal	-26.9	-20	25	MeOH	305
	Ag ⁺	3.59	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Ag ⁺	3.07(2)	Pot	-7.2(Cal)	34	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Ag ⁺	6.24(1)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Ag ⁺	1.77(2)	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Zn ²⁺	2.29	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	In ³⁺	3.40	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	In ³⁺	3.40	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	Tl ⁺	2.63	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Tl ⁺	2.72	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Tl ⁺	3.95	Polg			23	2-Aminoethanol, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.63	Polg			23	<i>n</i> -BuOH, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	0.91	NMR	-6.74	4.91	25	DMF	299
	Tl ⁺	3.30	Polg			23	EtOH, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.86	Polg			23	Ethylene glycol, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.54	Polg			23	4-Hydroxy-4-methyl-2-pentanone $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.31	Cal	-36.4	-60.4	25	MeOH	331
	Tl ⁺	3.05	Polg			23	MeOH, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.60	Polg			23	2-Methylpropanol, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.95	Polg			23	1-Pentanol, $I = ?$ (Et ₄ NClO ₄)	330
	Tl ⁺	3.44	Polg			23	PrOH, $I = ?$ (Et ₄ NClO ₄)	330
	Pb ²⁺	0.95	ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	Pb ²⁺	2.05	Polg			25	H ₂ O, 0.1 M Et ₄ NClO ₄	120
	Pb ²⁺	2.76	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	119
	Pb ²⁺	2.75	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	119
	Pb ²⁺	3.92	Cal	-24.7	-8.05	25	MeOH	332
	Pb ²⁺	3.56(1)	Cal	-28.4	-27.1	25	MeOH	331
	Pb ²⁺	2.00(2)	Cal	-21.1	-32.4	25	MeOH	331
	Pb ²⁺	3.36	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	UO ₂ ²⁺	0.7(1)	Na ⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295
	UO ₂ ²⁺	3.3(2)	Na ⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295
	UO ₂ ²⁺	0.5(1)	Pb ²⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	UO ₂ ²⁺	3.8(2)	Pb ²⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	UO ₂ ²⁺	none	Spec			25	MeCN, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	none	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333, 334
	CH ₃ OH ₂ ⁺	none	Spec	-254.4	-157.3	?	gas-phase ion-molecule equilibria	43
	Phe ⁺	1.51	Sol/Spec			?	MeOH	336
	Trp ⁺	1.09	Sol/Spec			?	MeOH	336
	Tyr ⁺	1.54	Sol/Spec			?	MeOH	336
	cation-1 ^f	1.84	Spec			25?	DCE (anion = BF ₄ ⁻)	335
	cation-2 ^f	1.49	Spec			25?	DCE (anion = BF ₄ ⁻)	335
	cation-3 ^f	0	Spec			25?	DCE (anion = BF ₄ ⁻)	335
15C5-2	Na ⁺	2.70	ISE			25	90% MeOH	303
	K ⁺	3.29	ISE			25	MeOH (anhydrous)	307
15C5-3	Na ⁺	3.20	ISE			25	MeOH (anhydrous)	307, 311
	Na ⁺	3.15	ISE			25	MeOH	128
	K ⁺	3.13	ISE			25	MeOH (anhydrous)	307
	K ⁺	3.0	ISE			25	MeOH	311
	K ⁺	3.19	ISE			25	MeOH	128
15C5-4	Na ⁺	2.73	ISE			25	MeOH-H ₂ O (9:1/v:v)	317
	Na ⁺	3.18	ISE			25	MeOH	317
	Na ⁺	3.2	ISE			25	MeOH	311
	K ⁺	2.52	ISE			25	MeOH-H ₂ O (9:1/v:v)	317
	K ⁺	3.05(1)	ISE			25	MeOH	317
	K ⁺	2.32(2)	ISE			25	MeOH	317
	K ⁺	3.1	ISE			25	MeOH	311
15C5-5	Na ⁺	3.18	ISE			25	MeOH	128
	Na ⁺	3.2	ISE			25	MeOH	311
	K ⁺	3.15	ISE			25	MeOH	128
	K ⁺	3.2	ISE			25	MeOH	311
15C5-6	Na ⁺	3.13	ISE			25	MeOH-H ₂ O (95:5)	140
	K ⁺	3.29	ISE			25	MeOH-H ₂ O (95:5)	140
15C5-7	Na ⁺	2.70	ISE			25	90% MeOH	303
	Na ⁺	2.95	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
	Na ⁺	3.10	ISE	-17.45	0.84	25	MeOH (anhydrous)	309
	Na ⁺	2.94	ISE			25	MeOH	303
	K ⁺	2.93	ISE			25	90% MeOH	303
	K ⁺	3.09	ISE			25	MeOH	303
15C5-8	Na ⁺	2.81	ISE			25	90% MeOH	303
	Na ⁺	2.99	ISE			25	MeOH	306
	Na ⁺	3.03	ISE			25	MeOH (anhydrous)	303, 307
	K ⁺	2.78	ISE			25	90% MeOH	303
	K ⁺	3.18	ISE			25	MeOH	306
	K ⁺	3.27	ISE			25	MeOH (anhydrous)	303, 307
15C5-9	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.08	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
15C5-10	Na ⁺	2.73	ISE			25	90% MeOH	303
	Na ⁺	3.12	ISE	-18.41	-1.97	25	MeOH (anhydrous)	309
	K ⁺	2.73	ISE			25	90% MeOH	303
15C5-11	Na ⁺	2.81	ISE			25	90% MeOH	303
	Na ⁺	2.95	ISE	-15.69	3.93	25	MeOH (anhydrous)	309

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
15C5-12	Na ⁺	2.84	ISE			25	MeOH·H ₂ O (9:1/v:v) (anion = ClO ₄ ⁻)	303, 304
	Na ⁺	3.05	ISE			25	MeOH (anhydrous)	307
15C5-13	Na ⁺	2.36	ISE			25	90% MeOH	303
	Na ⁺	2.72	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
15C5-14	Na ⁺	3.18	ISE			25	MeOH (anhydrous)	307, 317
	K ⁺	2.56	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	3.09(1)	ISE			25	MeOH (anhydrous)	307
	K ⁺	2.41(2)	ISE			25	MeOH (anhydrous)	307
	K ⁺	3.22(1)	ISE			25	MeOH	317
	K ⁺	2.41(2)	ISE			25	MeOH	317
15C5-15	Na ⁺	3.3	ISE			25	MeOH	311
	Na ⁺	3.34	ISE			25	MeOH	128
	K ⁺	3.4	ISE			25	MeOH	311
	K ⁺	3.38	ISE			25	MeOH	128
15C5-16	Na ⁺	2.51	ISE			25	90% MeOH	303
15C5-17	Na ⁺	2.74	ISE			25	90% MeOH	303
	Na ⁺	3.05	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
15C5-18	Na ⁺	2.97	ISE	-6.44	32.85	25	MeOH (anhydrous)	309
	Na ⁺	2.97	ISE			25	90% MeOH	303
	Na ⁺	3.25	ISE	8.70	-0.07	25	MeOH (anhydrous)	309
	Na ⁺	3.24	ISE			25	MeOH	303
	K ⁺	3.11	ISE			25	90% MeOH	303
	K ⁺	3.47	ISE			25	MeOH	303
15C5-19	Na ⁺	2.57	ISE			25	90% MeOH	303
	Na ⁺	2.89	ISE			25	MeOH	303
	K ⁺	2.86	ISE			25	90% MeOH	303
15C5-20	Na ⁺	2.56	ISE			25	90% MeOH	303
	Na ⁺	3.00	ISE	-17.70	-2.11	25	MeOH (anhydrous)	309
	K ⁺	2.73	ISE			25	90% MeOH	303
15C5-21	Na ⁺	3.04	ISE	-7.53	32.85	25	MeOH (anhydrous)	309
15C5-22	Li ⁺	2.11	NMR			25	MeCN	337
	Li ⁺	7.34	Calc'd			25	MeCN (Li ⁺ + L ⁻ → LiL)	337
	Na ⁺	6.33	CyVol			25	MeCN (Na ⁺ + L ⁻ → NaL)	338
	Na ⁺	6.01	CyVol			25	MeCN, 0.1 M Bu ₄ NClO ₄ (Na ⁺ + L ⁻ → NaL)	339
	Na ⁺	2.50	NMR			25	MeCN/MeCN·d ₃ (7:3/v:v)	337
	Na ⁺	2.83	ISE			25	MeOH	337
15C5-23	Na ⁺	2.72	ISE			25	MeOH	337
15C5-24	Na ⁺	3.07	ISE			25	MeOH (absolute)	127
	K ⁺	3.38	ISE			25	MeOH (absolute)	127
15C5-25	Na ⁺	3.04	ISE			25	MeOH (absolute)	127
	K ⁺	3.29	ISE			25	MeOH (absolute)	127
15C5-26	H ⁺	3.16	Spec			25	Diox·H ₂ O (1:9/v:v)	
							0.1 M Me ₄ NBr	340
15C5-27	Na ⁺	2.94	ISE			25	90% MeOH	303
15C5-28	Na ⁺	2.86	ISE			25	90% MeOH	303
	K ⁺	3.20	ISE			25	90% MeOH	303
15C5-29	Na ⁺	2.93	ISE			25	90% MeOH	303
	K ⁺	3.29	ISE			25	90% MeOH	303
15C5-30	H ⁺	7.51	Spec			25	DCE	341
	H ⁺	7.51	Spec			25	Diox·H ₂ O (1:9/v:v)	
							0.1 M Me ₄ NBr	340
15C5-31	Na ⁺	3.03	ISE			25	MeOH (absolute)	127
	K ⁺	3.53	ISE			25	MeOH (absolute)	127
15C5-32	Na ⁺	3.02	ISE			25	MeOH (absolute)	127
	K ⁺	3.44	ISE			25	MeOH (absolute)	127
15C5-33	Na ⁺	2.75	ISE			25	90% MeOH	303
	Na ⁺	3.14	ISE			25	MeOH	303
	Na ⁺	3.9	ISE	-18.54	-1.12	25	MeOH (anhydrous)	309
15C5-34	Na ⁺	3.00	ISE			25	MeOH	342
	K ⁺	3.03	ISE			25	MeOH	342
15C5-35	Na ⁺	3.03	ISE			25	MeOH	342
	K ⁺	3.09	ISE			25	MeOH	342
15C5-36	Na ⁺	2.97	ISE			25	MeOH	342
	K ⁺	3.04	ISE			25	MeOH	342
15C5-37	Na ⁺	3.04	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
15C5-38	Na ⁺	2.99	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
15C5-39	Na ⁺	2.82	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
15C5-40	Na ⁺	2.83	ISE			25	90% MeOH	303
	Na ⁺	3.01	ISE			25	MeOH	303
	Na ⁺	3.15	ISE			25	MeOH	306
	Na ⁺	3.05	ISE			25	MeOH (anhydrous)	307
	K ⁺	2.97	ISE			25	90% MeOH	303
	K ⁺	3.20	ISE			25	MeOH	303, 306
	K ⁺	3.32	ISE			25	MeOH (anhydrous)	307
15C5-41	Na ⁺	2.94	ISE			25	90% MeOH	303
	Na ⁺	3.09	ISE			25	MeOH	303
	K ⁺	3.37	ISE			25	MeOH	303
15C5-42	Na ⁺	2.72	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	Na ⁺	3.22	ISE			25	MeOH	317
	K ⁺	2.57	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	3.14(1)	ISE			25	MeOH	317
	K ⁺	2.30(2)	ISE			25	MeOH	317
15C5-43	Na ⁺	2.94	ISE			25	90% MeOH	303
	Na ⁺	3.16	ISE			25	MeOH	306
	Na ⁺	3.13	ISE			25	MeOH (anhydrous)	303, 307
	K ⁺	3.21	ISE			25	90% MeOH	303

TABLE I (Continued)

ligand	cation	log K°	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T_f , °C	conditions ^c	ref	
15C5-44	K ⁺	3.50	ISE			25	MeOH	303, 306	
	Na ⁺	2.75	ISE			25	MeOH·H ₂ O (9:1/v:v)	317	
	Na ⁺	3.23	ISE			25	MeOH	317	
	K ⁺	2.71	ISE			25	MeOH·H ₂ O (9:1/v:v)	317	
	K ⁺	3.28(1)	ISE			25	MeOH	317	
15C5-45	K ⁺	2.20(2)	ISE			25	MeOH	317	
	Na ⁺	2.80	ISE			25	90% MeOH	303	
	Na ⁺	3.04	ISE			25	MeOH (anhydrous)	303, 307	
15C5-46	K ⁺	3.45	ISE			25	MeOH (anhydrous)	303, 307	
	Na ⁺	2.94	ISE			25	90% MeOH	303	
	Na ⁺	3.09	ISE			25	MeOH (anhydrous)	303, 307	
	Na ⁺	3.16	ISE			25	MeOH	306	
15C5-47	K ⁺	3.52	ISE			25	MeOH	303, 306	
	K ⁺	3.50	ISE			25	MeOH (anhydrous)	307	
	Na ⁺	2.82	Pot			25	MeOH	312	
15C5-48	K ⁺	3.01	Pot			25	MeOH	312	
	Na ⁺	2.79	Pot			25	MeOH	312	
15C5-49	K ⁺	2.82	Pot			25	MeOH	312	
	Na ⁺	2.82	Pot			25	MeOH	312	
15C5-50	K ⁺	2.95	Pot			25	MeOH	312	
	Na ⁺	2.91	Pot			25	MeOH	312	
15C5-51	K ⁺	3.00	Pot			25	MeOH	312	
	Na ⁺	2.92	Pot			25	MeOH	312	
15C5-52	K ⁺	3.06	Pot			25	MeOH	312	
	Na ⁺	2.74	ISE			25	90% MeOH	303	
15C5-53	Na ⁺	3.39	ISE			25	90% MeOH	303	
	Na ⁺	3.72	ISE			25	MeOH	303	
	K ⁺	3.19	ISE			25	90% MeOH	303	
CHART IX									
15C5-54	Na ⁺	2.99	ISE			25	MeOH (anhydrous)	343	
	K ⁺	2.85	ISE			25	MeOH (anhydrous)	343	
15C5-55	Na ⁺	2.86	ISE			25	MeOH (anhydrous)	307	
	K ⁺	2.70	ISE			25	MeOH (anhydrous)	307	
15C5-56	Na ⁺	3.88	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.36	ISE			25	MeOH (anhydrous)	343	
15C5-57	Na ⁺	3.88	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.82	ISE			25	MeOH (anhydrous)	343	
15C5-58	Na ⁺	3.73	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.99	ISE			25	MeOH (anhydrous)	343	
15C5-59	Na ⁺	3.87	ISE			25	MeOH (anhydrous)	307	
	K ⁺	3.42	ISE			25	MeOH (anhydrous)	307	
15C5-60	Na ⁺	3.89	ISE			25	MeOH (anhydrous)	307	
	K ⁺	3.98	ISE			25	MeOH (anhydrous)	307	
15C5-61	Na ⁺	3.87	ISE			25	MeOH (anhydrous)	307	
	K ⁺	4.00	ISE			25	MeOH (anhydrous)	307	
15C5-62	Na ⁺	3.48	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.14	ISE			25	MeOH (anhydrous)	343	
15C5-63	Na ⁺	3.57	ISE			25	MeOH (anhydrous)	307	
	K ⁺	3.35	ISE			25	MeOH (anhydrous)	307	
15C5-64	Na ⁺	3.08	ISE			25	MeOH (anhydrous)	307	
	K ⁺	2.98	ISE			25	MeOH (anhydrous)	307	
15C5-65	Na ⁺	3.08	ISE			25	MeOH (anhydrous)	307	
	K ⁺	2.94	ISE			25	MeOH (anhydrous)	307	
15C5-66	Na ⁺	3.54	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.15	ISE			25	MeOH (anhydrous)	343	
15C5-67	Na ⁺	3.75	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.47	ISE			25	MeOH (anhydrous)	343	
15C5-68	Na ⁺	3.88	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.79	ISE			25	MeOH (anhydrous)	343	
15C5-69	Na ⁺	3.42	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.09	ISE			25	MeOH (anhydrous)	343	
15C5-70	Na ⁺	3.75	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.42	ISE			25	MeOH (anhydrous)	343	
15C5-71	Na ⁺	3.89	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.78	ISE			25	MeOH (anhydrous)	343	
15C5-72	Na ⁺	3.58	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.08	ISE			25	MeOH (anhydrous)	343	
15C5-73	Na ⁺	4.02	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.49	ISE			25	MeOH (anhydrous)	343	
15C5-74	Na ⁺	3.79	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.35	ISE			25	MeOH (anhydrous)	343	
15C5-75	Na ⁺	4.87	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.56	ISE			25	MeOH (anhydrous)	343	
15C5-76	Na ⁺	4.31	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.75	ISE			25	MeOH (anhydrous)	343	
15C5-77	Na ⁺	2.74	ISE			25	MeOH (anhydrous)	343	
	K ⁺	2.55	ISE			25	MeOH (anhydrous)	343	
15C5-78	Na ⁺	3.90	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.29	ISE			25	MeOH (anhydrous)	343	
15C5-79	Na ⁺	3.91	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.84	ISE			25	MeOH (anhydrous)	343	
15C5-80	Na ⁺	3.71	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.72	ISE			25	MeOH (anhydrous)	343	
15C5-81	Na ⁺	3.56	ISE			25	MeOH (anhydrous)	343	
	K ⁺	2.93	ISE			25	MeOH (anhydrous)	343	
15C5-82	Na ⁺	3.39	ISE			25	MeOH (anhydrous)	343	
	K ⁺	2.97	ISE			25	MeOH (anhydrous)	343	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
15C5-83	Na ⁺	3.62	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.25	ISE			25	MeOH (anhydrous)	343	
15C5-84	Na ⁺	3.75	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.56	ISE			25	MeOH (anhydrous)	343	
15C5-85	Na ⁺	4.85	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.41	ISE			25	MeOH (anhydrous)	343	
15C5-86	Na ⁺	2.79	ISE			25	MeOH (anhydrous)	343	
	K ⁺	2.61	ISE			25	MeOH (anhydrous)	343	
15C5-87	Na ⁺	3.82	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.17	ISE			25	MeOH (anhydrous)	343	
15C5-88	Na ⁺	3.86	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.76	ISE			25	MeOH (anhydrous)	343	
15C5-89	Na ⁺	3.75	ISE			25	MeOH (anhydrous)	343	
	K ⁺	3.79	ISE			25	MeOH (anhydrous)	343	
CHART X									
15C5-90	Na ⁺	2.81	ISE			25	MeOH	344	
	K ⁺	2.38	ISE			25	MeOH	344	
15C5-91	Na ⁺	3.09	ISE			25	MeOH	344	
	K ⁺	3.13	ISE			25	MeOH	344	
15C5-92	Na ⁺	3.89	ISE			25	MeOH	344	
	K ⁺	3.36	ISE			25	MeOH	344	
15C5-93	Na ⁺	4.22	ISE			25	MeOH	344	
	K ⁺	3.61	ISE			25	MeOH	344	
15C5-94	Na ⁺	4.11	ISE			25	MeOH	344	
	K ⁺	3.54	ISE			25	MeOH	344	
15C5-95	Na ⁺	2.56	ISE			25	MeOH	344	
	K ⁺	2.13	ISE			25	MeOH	344	
15C5-96	Na ⁺	4.15	ISE			25	MeOH	344	
	K ⁺	3.37	ISE			25	MeOH	344	
15C5-97	Na ⁺	4.36	ISE			25	MeOH	344	
	K ⁺	3.58	ISE			25	MeOH	344	
15C5-98	H ⁺	5.95	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	Na ⁺	3.4	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 9.3	345	
	Na ⁺	2.7 (NaHL)	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 3.01	345	
	Na ⁺	3.4	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	Na ⁺	2.7 (NaHL)	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	K ⁺	3.0	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 9.3	345	
	K ⁺	2.2 (KHL)	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 3.01	345	
	K ⁺	2.9	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	K ⁺	2.1 (KHL)	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	Rb ⁺	2.6	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 9.3	345	
	Rb ⁺	~1.7 (RbHL)	ISE			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl, pH 3.01	345	
	Rb ⁺	2.7	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	Rb ⁺	1.8 (RbHL)	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345	
	15C5-99	H ⁺	5.95	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345
		K ⁺	2.9	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345
		K ⁺	2.1 (KHL)	Pot			25	MeOH-H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	345
15C5-100	Na ⁺	3.34	ISE			25	MeOH	128, 308	
	K ⁺	2.85	ISE			25	MeOH	128, 308	
15C5-101	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.20	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	346	
15C5-102	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.48	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	347	
K15C5-1	Na ⁺	1.98	ISE			25	MeOH	348	
	K ⁺	2.12	ISE			25	MeOH	348	
K15C5-2	Na ⁺	1.48	ISE			25	MeOH	348	
	K ⁺	1.90	ISE			25	MeOH	348	
K ₂ 15C5-1	Eu ³⁺ , 3Fod ⁻	2.13-3.70	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	113	
	Eu ³⁺ , 3Fod ⁻	1.65-2.37	NMR			30	C ₆ D ₆ (Fod = heptafluoro- dimethyloctanedionate)	113	
K ₃ 15C5-1	Na ⁺	<2	Polg			25	EtOH, 0.025 M Bu ₄ NI	297	
	K ⁺	<2	Polg			25	EtOH, 0.025 M Bu ₄ NI	297	
K ₃ 15C5-2	Na ⁺	3.27	Polg			25	EtOH, 0.025 M Bu ₄ NI	297	
	K ⁺	<2	Polg			25	EtOH, 0.025 M Bu ₄ NI	297	
Cy15C5-1	H ⁺	2.49	Cal	-30.9	-56.0	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
	H ⁺	3.87(HL ₂)	Cal	-15.3	22.5	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
	Na ⁺	3.90(1)	Cal	-20.1	7	25	MeOH	305	
	Na ⁺	2.90(2)	Cal	-16.5	0	25	MeOH	305	
	Na ⁺	3.69(1)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	2.76(2)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	K ⁺	4.15(1)	ISE	-24.3(Cal)	-2.35	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.50(2)	ISE	-13.0(Cal)	4.03	25	MeCN, 0.05 M Et ₄ NClO ₄	107
	K ⁺	3.96(1)	Cal	-23.4	-3	25	MeOH	305
	K ⁺	2.57(2)	Cal	-34.4	-66	25	MeOH	305
	K ⁺	3.70(1)	ISE	-26.2(Cal)	-17.5	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	3.20(2)	ISE	-20.1(Cal)	-6.38	25	PC, 0.05 M Et ₄ NClO ₄	107
	Rb ⁺	4.37(1)	Cal	-24.7	0	25	MeOH	305
	Rb ⁺	2.56(2)	Cal	-45.9	-105	25	MeOH	305
	Cs ⁺	3.53(1)	Cal	-22.2	-7	25	MeOH	305
	Cs ⁺	2.72(2)	Cal	-18.6	-10	25	MeOH	305
	Ca ²⁺	1.88	Cal	-4.7	20	25	MeOH	305
	Ca ²⁺	1.93	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Sr ²⁺	3.39(1)	Cal	-4.9	48	25	MeOH	305
	Sr ²⁺	2.50(2)	Cal	-20.7	-22	25	MeOH	305
	Ba ²⁺	3.88(1)	Cal	-17.3	16	25	MeOH	305
	Ba ²⁺	2.60(2)	Cal	-34.5	-66	25	MeOH	305
	La ³⁺	2.38	Cond			24.6	EtOH (anion = SCN ⁻)	349
	La ³⁺	2.49	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Ce ³⁺	3.27	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Pr ³⁺	3.04	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Nd ³⁺	2.90	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Co ²⁺	5.63	Pot	-24.4(Cal)	25.5	25	PC, 0.01 M Et ₄ NClO ₄	117
	Cu ²⁺	>5	Pot	-66.2(Cal)		25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	4.39	Cal	-27.0	-7	25	MeOH	305
	Ag ⁺	4.29	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
				Chart XI				
B15C5-1	H ⁺	2.56	Cal	-22.5	-26.8	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93
	H ⁺	3.26(HL ₂)	Cal	-14.5	13.4	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93
	Li ⁺	6.09	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Li ⁺	6.04	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	350
	Li ⁺	2.33	NMR			40?	1 mol% LiCl in 45 mol% AlCl ₃ melt	41
	Li ⁺	3.20	Cal	-17.5	3	25	MeCN (anion = SCN ⁻)	129, 130
	Li ⁺	4.46	Cond			25	MeCN	351
	Li	<0.4	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Li	none	Cond			25	MeOH (anion = Cl ⁻)	100
	Li ⁺	2.31	Cond			25	MeOH	351
	Li ⁺	1.23	OSM			25	MeOH	313
	Li ⁺	none	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Na ⁺	-0.21	Mac Dist-UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	353
	Na ⁺	6.26	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	6.16	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	350
	Na ⁺	3.00	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Na ⁺	0.76	Spec			25	20 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	Na ⁺	1.18	Spec			25	40 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	Na ⁺	1.68	Spec			25	60 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	Na ⁺	2.45	Spec			25	80 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	Na ⁺	3.65	Spec			25	MeCN, 0.015 M Et ₃ NCl	355
	Na ⁺	4.47	Cal	-23.5	6.4	25	MeCN	298
	Na ⁺	4.02	Cal	-23.5	-2	25	MeCN (anion = SCN ⁻)	129, 130
	Na ⁺	4.25	Cond			25	MeCN	351
	Na ⁺	4.61	Cond	-36.0	-32.8	25	MeCN (anion = BPh ₄ ⁻)	356
	Na ⁺	3.47(1)	NMR			25	Me ₂ CO	300
	Na ⁺	1.74(2)	NMR			25	Me ₂ CO	300
	Na ⁺	2.68	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Na ⁺	2.20	Cal	-33.97	-71.9	25	MeOH·H ₂ O (8:2)	131
	Na ⁺	1.97	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Na ⁺	2.89	Cal	-18.6	-7.05	25	MeOH	331
	Na ⁺	3.06	Cal	-24.0		25	MeOH (anion = Cl ⁻)	357
	Na ⁺	3.03	Cal	-24.1		25	MeOH (anion = I ⁻)	357
	Na ⁺	3.10	Cal	-24.7		25	MeOH (anion = BPh ₄ ⁻)	357
	Na ⁺	3.03	Cal	-21.1	-13	25	MeOH	305
	Na ⁺	2.99	Cond			25	MeOH	351
	Na ⁺	2.94	Cond			25	MeOH (anion = Cl ⁻)	
	Na ⁺	2.94(1)	Cond			25	0.515 mM NaCl MeOH (anion = Cl ⁻)	100
	Na ⁺	2.14(2)	Cond			25	1.029 mM NaCl MeOH (anion = Cl ⁻)	100
	Na ⁺	3.37	Cond			25	1.029 mM NaCl MeOH	100
	Na ⁺	2.91	ISE			25	MeOH	358
	Na ⁺	3.05	ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Na ⁺	3.38	OSM			25	MeOH	361
	Na ⁺	2.97	Polg			25	MeOH	313
	Na ⁺	2.97	Polg			25	MeOH, 0.1 M Et ₄ NI	362

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Na ⁺	3.03(1)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	2.42(2)	Pot	~0(Cal)	~46	25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	0.98	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Na ⁺	1.95	NMR			30	Py/Py- <i>d</i> ₅ (1:1), 0.07·0.17 M NaClO ₄	363
	Na ⁺ ,TCNE ⁻		Spec	-14.6	62.8	-50 to +50	Toluene (anion = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-13.0	50.6	-50 to +50	<i>o</i> -Xylene (anion = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-17.6	71.6	-50 to +50	<i>m</i> -Xylene (anion = tetracyanoethylene)	315
	K ⁺	-0.05	Mac Dist·UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	353
	K ⁺	5.90	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	5.81	Solv Extr·UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	350
	K ⁺	2.88	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	K ⁺	0.81	Spec			25	20 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	1.34	Spec			25	40 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	2.00	Spec			25	60 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	2.88	Spec			25	80 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	4.27	Spec			25	MeCN, 0.015 M Et ₃ NCl	355
	K ⁺	4.17	Cal	-23.4	1.0	25	MeCN	298
	K ⁺	3.58(1)	Cal	-25.5	-17	25	MeCN (anion = SCN ⁻)	129, 130
	K ⁺	2.77(2)	Cal	-27.7	-40	25	MeCN (anion = SCN ⁻)	129, 130
	K ⁺	2.49	Cond			25	MeCN	351
	K ⁺	3.24	Cond	-24.5	-20.0	25	MeCN (anion = BPh ₄ ⁻)	356
	K ⁺	2.63(1)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	2.74(2)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	1.50(1)	Cal	-11.72	-10.5	25	MeOH·H ₂ O (8:2)	364
	K ⁺	3.24(2)	Cal	-52.96	-115.7	25	MeOH·H ₂ O (8:2)	364, 365
	K ⁺	1.97(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	K ⁺	2.40(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	K ⁺	3.93(1)	Cal	-27.1	-16	25	MeOH	305
	K ⁺	2.57(2)	Cal	-43.5	-97	25	MeOH	305
	K ⁺	2.71	Cond			25	MeOH	351
	K ⁺	2.96(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	3.20(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	K ⁺	3.05(1)	ISE			25	MeOH	361
	K ⁺	3.38(2)	ISE			25	MeOH	361
	K ⁺	2.90(1)	OSM			25	MeOH	313
	K ⁺	2.75(2)	OSM			25	MeOH	313
	K ⁺	5.9(1+2)	Pot			25	MeOH	366
	K ⁺	1.29	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Rb ⁺	5.40	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Rb ⁺	5.15	Solv Extr·UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	350
	Rb ⁺	3.06	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Rb ⁺	3.84	Cal	-18.9	9.7	25	MeCN	298
	Rb ⁺	2.72	Cond			25	MeCN	351
	Rb ⁺	2.82	Cond	-29.7	-46.0	25	MeCN (anion = BPh ₄ ⁻)	356
	Rb ⁺	1.77(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Rb ⁺	1.96(2)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻)	100
	Rb ⁺	3.97(1)	Cal	-22.6	0	25	MeOH	305
	Rb ⁺	2.55(2)	Cal	-41.2	-90	25	MeOH	305
	Rb ⁺	2.40	Cond			25	MeOH	351
	Rb ⁺	2.68(1)	Cond			25	MeOH (anion = Cl ⁻)	100
	Rb ⁺	2.70(2)	Cond			25	MeOH (anion = Cl ⁻)	100
	Rb ⁺	3.11	Polg			25	MeOH, 0.1 M Me ₄ NI	367
	Rb ⁺	3.12(1)	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Rb ⁺	2.90(2)?	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Rb ⁺	5.37(2)?	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Rb ⁺	2.53(1)	Pot			25	MeOH	366
	Rb ⁺	2.87(2)	Pot			25	MeOH	366
	Rb ⁺	1.23	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Cs ⁺	4.76	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Cs ⁺	4.48	Solv Extr·UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	350
	Cs ⁺	3.43	Cal	-12.5	23.5	25	MeCN	298
	Cs ⁺	2.39	Cond			25	MeCN	351
	Cs ⁺	2.46	Cond	-32.9	-63.7	25	MeCN (anion = BPh ₄ ⁻)	356
	Cs ⁺	2.08	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Cs ⁺	1.66(1)	Cond			25	MeOH·H ₂ O (7:3/w:w), (anion = Cl ⁻) 0.508 mM CsCl	100

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Cs ⁺	1.02(2)	Cond			25	MeOH-H ₂ O (7:3/w:w), (anion = Cl ⁻) 0.508 mM CsCl	100
	Cs ⁺	1.55(1)	Cond			25	MeOH-H ₂ O (7:3/w:w), (anion = Cl ⁻) 0.798 mM CsCl	100
	Cs ⁺	1.13(2)	Cond			25	MeOH-H ₂ O (7:3/w:w), (anion = Cl ⁻) 0.798 mM CsCl	100
	Cs ⁺	2.20	Cond			25	MeOH (anion = Cl ⁻), 0.472 mM CsCl	100
	Cs ⁺	2.21(1)	Cond			25	MeOH (anion = Cl ⁻) 0.796 mM CsCl	100
	Cs ⁺	1.53(2)	Cond			25	MeOH (anion = Cl ⁻) 0.796 mM CsCl	100
	Cs ⁺	2.15(1)	Cond			25	MeOH (anion = Cl ⁻) 1.0 mM CsCl	100
	Cs ⁺	1.34(2)	Cond			25	MeOH (anion = Cl ⁻) 1.0 mM CsCl	100
	Cs ⁺	3.52(1)	Cal	-13.9 ¹	20	25	MeOH	305
	Cs ⁺	2.68(2)	Cal	-15.2	0	25	MeOH	305
	Cs ⁺	2.15	Cond			25	MeOH	351
	Cs ⁺	1.91	Cond			25	MeOH	358
	Cs ⁺	4.7(1+2)	Pot			25	MeOH	366
	Cs ⁺	1.13	Spec			25	Me ₂ SO-H ₂ O (99:1/v:v)	352
	Mg ²⁺	<2.0	Spec			25	DMF	368
	Mg ²⁺	2.27	Spec			25	MeOH	368
	Mg ²⁺	<2.0	Spec			25	Me ₂ SO	368
	Ca ²⁺	2.32	Spec			25	DMF	368
	Ca ²⁺	1.23	Cal	-13.9	-23	25	EtOH (anion = Cl ⁻)	132
	Ca ²⁺	1.16	Cal	-16.0	-31	25	EtOH (anion = SCN ⁻)	132
	Ca ²⁺	nm	Cal			25	EtOH (anion = NO ₃ ⁻)	132
	Ca ²⁺	4.18	Cal	-26.0	-7.2	25	MeCN (anion = SCN ⁻)	130, 133
	Ca ²⁺	4.20(1)	Cal	-26.5	-8	25	MeCN (anion = SCN ⁻)	129, 130
	Ca ²⁺	1.60(2)	Cal	13.0	-13	25	MeCN (anion = SCN ⁻)	129
	Ca ²⁺	3.91	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	3.64(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	1.56(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	1.56	Cal	1.8		25	MeOH	369
	Ca ²⁺	nm	Cal			25	MeOH	331
	Ca ²⁺	2.33	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Ca ²⁺	2.66	Spec			25	MeOH	368
	Ca ²⁺	2.12	Spec			25	Me ₂ SO	368
	Sr ²⁺	2.15	Spec			25	DMF	368
	Sr ²⁺	2.92(1)	Cal	-2.3	50	25	MeOH	305
	Sr ²⁺	2.53(2)	Cal	-18.8	-15	25	MeOH	305
	Sr ²⁺	2.94	Cal	-2.6		25	MeOH	369
	Sr ²⁺	nm	Cal			25	MeOH	331
	Sr ²⁺	2.42	Spec			25	MeOH	368
	Sr ²⁺	<2.0	Spec			25	Me ₂ SO	368
	Ba ²⁺	>5	Cal	-25.9		25	MeCN	298
	Ba ²⁺	3.63(1)	Cal	-5.9	49	25	MeOH	305
	Ba ²⁺	2.62(2)	Cal	-17.7	-10	25	MeOH	305
	Y ³⁺	2.38	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	La ³⁺	2.13	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Ce ³⁺	2.30	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Pr ³⁺	2.18	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Nd ³⁺	2.27	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Sm ³⁺	5.218	Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Sm ³⁺	2.37	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Eu ³⁺	4.975	Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Gd ³⁺	2.35	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Dy ³⁺	2.60	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Er ³⁺	2.40	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Lu ³⁺	2.41	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Yb ³⁺	4.703	Polg			25	H ₂ O, 0.1 M LiClO ₄	324
	Co ²⁺	1.24	Pot	-16.0(Cal)	-30.2	25	PC, 0.01 M Et ₄ NClO ₄	117
	Cu ²⁺	>5	Pot	-32.9(Cal)		25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	3.47	Pot			25	EtOH-H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Ag ⁺	nm	Cal+Pot			25	MeCN, 0.05 M Et ₄ ClO ₄	298
	Ag ⁺	3.06	Cal	-16.6	3	25	MeOH	305
	Ag ⁺	<3	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Cd ²⁺	3.40	d.c.Polg			25	H ₂ O, 0.1 M HNO ₃	119
	Cd ²⁺	2	a.c.Polg			25	H ₂ O, 0.1 M HNO ₃	119
	In ³⁺	2.85	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	In ³⁺	2.88	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	Tl ⁺	2.27	d.c.Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Tl ⁺	2.30	a.c.Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Pb ²⁺	2.76	Polg			25	H ₂ O, 0.1 N HNO ₃	370
	Pb ²⁺	2.04	Pot			25	MeOH-H ₂ O (95:5)	215
	Pb ²⁺	2.36	Cal	-21.5	-26.9	25	MeOH	331
	UO ₂ ²⁺	2.88	Pot			25	EtOH-H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	NH ₄ ⁺	2.16(1)	Cal	-19.2	-23	25	MeCN (anion = SCN ⁻)	129, 130
	NH ₄ ⁺	1.97(2)	Cal	-39.0	-93	25	MeCN (anion = SCN ⁻)	129, 130
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.91	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
	cation-4 ^f	2.36	Spec			40	C ₂ H ₂ Cl ₄ (anion = BF ₄ ⁻)	372
B15C5-2	K ⁺	3.12(2)	Cal	-79.45	-206.8	25	MeOH-H ₂ O (8:2)	365
B15C5-4	Na ⁺	2.20	ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	K ⁺	2.70(2)	Cal	-49.62	-114.6	25	MeOH-H ₂ O (8:2)	365

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ca ²⁺	3.55	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	La ³⁺	2.43	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Pr ³⁺	2.45	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Nd ³⁺	2.70	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Sm ³⁺	2.81	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Gd ³⁺	2.98	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Dy ³⁺	3.36	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Er ³⁺	3.40	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Lu ³⁺	3.60	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
	Y ³⁺	3.26	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359, 360
B15C5-5	K ⁺	3.50(2)	Cal	-59.96	-124.0	25	MeOH·H ₂ O (8:2)	365
B15C5-6	Na ⁺	3.89	Cond			25	MeOH	373
	K ⁺	3.63(2)	Cond			25	MeOH	373
	Rb ⁺	3.58(2)	Cond			25	MeOH	373
B15C5-7	K ⁺	3.40(2)	Cal	-17.82	17.7	25	MeOH·H ₂ O (8:2)	365
	K ⁺	6.07(1+2)	Pot			25	MeOH	366
	La ³⁺	3.22	Calc'd			25?	PC (anhydrous)	111
	Pr ³⁺	3.34	Spec			25?	PC (anhydrous), (anion = ClO ₄ ⁻)	374
	Gd ³⁺	3.00	Calc'd			25?	PC (anhydrous)	111
	Lu ³⁺	2.81	Calc'd			25?	PC (anhydrous)	111
B15C5-8	Na ⁺	3.28	Spec			25	MeOH (anion = SCN ⁻)	375
	K ⁺	3.48	Spec			25	MeOH (anion = SCN ⁻)	375
	NH ₄ ⁺	1.64	Spec			25	MeOH (anion = SCN ⁻)	375
	L-(H ₂ LeuOCH ₃) ^{†‡}	1.34	Spec			25	MeOH (anion = Cl ⁻)	375
	D-(H ₂ LeuOCH ₃) ^{†‡}	1.34	Spec			25	MeOH (anion = Cl ⁻)	375
	(H ₂ GlyOCH ₃) ^{†‡}	1.55	Spec			25	MeOH (anion = Cl ⁻)	375
B15C5-9	Na ⁺	3.72	Cal	-20.1	4	25	MeCN (anion = SCN ⁻)	129, 134
	K ⁺	2.86(1)	Cal	-22.5	-21	25	MeCN (anion = SCN ⁻)	129, 134
	K ⁺	2.96(2)	Cal	-31.3	-48	25	MeCN (anion = SCN ⁻)	129, 134
	Ca ²⁺	3.80	Cal	-21.0	2	25	MeCN (anion = SCN ⁻)	129, 134
	Ca ²⁺	0.5	Cal	.7	-14	25	EtOH (anion = Cl ⁻)	132
	Ca ²⁺	nm	Cal			25	EtOH (anion = NO ₃ ⁻)	132
	NH ₄ ⁺	2.14(1)	Cal	-21.6	-31	25	MeCN (anion = SCN ⁻)	129, 134
	NH ₄ ⁺	2.44(2)	Cal	-23.4	-32	25	MeCN (anion = SCN ⁻)	129, 134
B15C5-10	Na ⁺	2.49	ISE			25	MeOH	376
	K ⁺	2.9	ISE			25	MeOH	376
B15C5-11	Na ⁺	2.47	ISE			25	MeOH	376
	K ⁺	2.8	ISE			25	MeOH	376
B15C5-12	Na ⁺	2.48	ISE			25	MeOH	376
	K ⁺	2.8	ISE			25	MeOH	376
B15C5-13	Na ⁺	2.51	ISE			25	MeOH	376
	K ⁺	2.8	ISE			25	MeOH	376
B15C5-14	K ⁺	2.84	Spec			25	MeOH (anion = SCN ⁻)	377
B15C5-15	Na ⁺	2.70	ISE			25	MeOH	376
	K ⁺	3.0	ISE			25	MeOH	376
B15C5-16	K ⁺	3.12	Spec			25	MeOH (anion = SCN ⁻)	377
B15C5-17	Na ⁺	3.60(1)	Cal	-20.4	1	25	MeCN (anion = SCN ⁻)	129, 134
	Na ⁺	0.55(2)	Cal	20.4	78	25	MeCN (anion = SCN ⁻)	129, 134
	K ⁺	3.32(1)	Cal	-23.6	-16	25	MeCN (anion = SCN ⁻)	129, 134
	K ⁺	2.66(2)	Cal	-28.0	-43	25	MeCN (anion = SCN ⁻)	129, 134
	Ca ²⁺	3.80	Cal	-21.0	2	25	MeCN (anion = SCN ⁻)	129, 134
	NH ₄ ⁺	2.07(1)	Cal	-22.6	-36	25	MeCN (anion = SCN ⁻)	129, 134
	NH ₄ ⁺	2.28(2)	Cal	-22.6	-32	25	MeCN (anion = SCN ⁻)	129, 134
B15C5-18	Na ⁺	6.02	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	9.67	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	8.98	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Cs ⁺	7.77	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Mg ²⁺	4.20	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ca ²⁺	4.21	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Sr ²⁺	7.69	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ba ²⁺	7.98	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ag ⁺	4.83	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Tl ⁺	8.89	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
B15C5-19	H ⁺	11.6	Spec			25	Diox·H ₂ O (2:8/v:v), 0.1 M LiCl	381
	Na ⁺	3.38	ISE			25	MeOH	361
	K ⁺	3.25(1)	ISE			25	MeOH	361
	K ⁺	3.37(2)	ISE			25	MeOH	361
B15C5-20	H ⁺	8.6	Spec			25	Diox·H ₂ O (2:8/v:v), 0.1 M LiCl	381
B15C5-21	H ⁺	9.7	Spec			25	Diox·H ₂ O (2:8/v:v), 0.1 M LiCl	381
B15C5-22	H ⁺	7.3	Spec			25	Diox·H ₂ O (2:8/v:v), 0.1 M LiCl	381
B15C5-23	Na ⁺	3.06	ISE			25	MeOH	361
	K ⁺	3.10(1)	ISE			25	MeOH	361
	K ⁺	3.74(2)	ISE			25	MeOH	361

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
B15C5-24	Na ⁺	3.07	ISE			25	MeOH	361	
B15C5-25	Na ⁺	3.06	ISE			25	MeOH	361	
	K ⁺	3.28(1)	ISE			25	MeOH	361	
B15C5-26	K ⁺	3.49(2)	ISE			25	MeOH	361	
	Na ⁺	3.2	Fluor			25	ZLI-2806 (anion = SCN ⁻)	42	
B15C5-27	K ⁺	2.5	Fluor			25	ZLI-2806 (anion = SCN ⁻)	42	
	H ⁺	7.52(1)	Pot?			?	H ₂ O	382	
B15C5-28	H ⁺	2.27(2)	Pot?			?	H ₂ O	382	
	Na ⁺	3.60(1)	NMR			25	Me ₂ CO	300	
B15C5-29	Na ⁺	0.40(2)	NMR			25	Me ₂ CO	300	
	Na ⁺	1.00(Na ₃ L ₂)	NMR			25	Me ₂ CO (3Na ⁺ + 2L)	300	
	Na ⁺	2.60	Cal	-12.34	8.39	25	MeOH, $I \sim 0$ (anion = Cl ⁻)	383	
	K ⁺	2.17(1)	Cal	-2.85	32.00	25	MeOH, $I \sim 0$ (anion = Cl ⁻)	383	
	K ⁺	2.21(2)	Cal	-25.48	-43.17	25	MeOH, $I \sim 0$ (anion = Cl ⁻)	383	
	Rb ⁺	2.04	Cal	-8.43	10.80	25	MeOH, $I \sim 0$ (anion = Cl ⁻)	383	
	Na ⁺	3.00(1)	NMR			25	Me ₂ CO	300	
	Na ⁺	0.19(2)	NMR			25	Me ₂ CO	300	
B15C5-30	Na ⁺	0.99(Na ₃ L ₂)	NMR			25	Me ₂ CO (3Na ⁺ + 2L)	300	
	H ⁺	7.9 Spec				25	Diox·H ₂ O (2:8/v:v), 0.1 M LiCl	381	
B ₂ 15C5-1	K ⁺	5.7(1+2)	Pot			25	MeOH	366	
	Cs ⁺	1.96	Pot			25	MeOH	366	
B ₂ 15C5-2	K ⁺	4.4(1+2)	Pot			25	MeOH	366	
B ₂ 15C5-3	K ⁺	3.6(1+2)	Pot			25	MeOH	366	
B ₂ 15C5-4	K ⁺	4.4(1+2)	Pot			25	MeOH	366	
(2,3-Nap)15C5-1	Na ⁺	-0.46	Mac Dist-UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	381	
	K ⁺	-0.09	Mac Dist-UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	381	
	K ⁺	5.26 (1+2)	Solv Extr-UV (Pic Anal)			15	DCE (anion = picrate)	381	
	Rb ⁺	-0.46	Mac Dist-UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	381	
	Cs ⁺	-0.64	Mac Dist-UV (Mac Anal)			15	H ₂ O (anion = Cl ⁻)	381	
Py15C5-1	H ⁺	4.88	Pot			25	H ₂ O	271	
	Li ⁺	2.19	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Na ⁺	3.34	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	3.01	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	2.63	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	2.44	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Ba ²⁺	5.05	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
Py15C5-2	H ⁺	4.88	Pot			25	H ₂ O, 0.1 M HCl	385	
	H ⁺	~4.9	Pot			25	H ₂ O	386	
	H ⁺	~4.05	Pot			25	85.4 wt% EtOH·H ₂ O	386	
	H ⁺	~4.4	Pot			25	51.2 wt% MeOH·H ₂ O	386	
	H ⁺	~6.3	Pot			25	MeOH	386	
K ₂ Py15C5-1	Na ⁺	2.95	Cal	-8.4	28	25	MeOH	387	
	K ⁺	2.52	Cal	-29.1	-50	25	MeOH	387	
	Rb ⁺	2.51	Cal	-17.1	-10	25	MeOH	387	
	Cs ⁺	2.41	Cal	-9.3	15	25	MeOH	387	
	Str ²⁺	2.48	Cal	-10.3	13	25	MeOH	387	
	Ba ²⁺	2.45	Cal	-25.6	-39	25	MeOH	387	
	Ag ⁺	2.56(1)	Pot	-37.6(Cal)	-77	25	MeOH, 0.05 M Et ₄ NClO ₄	327	
	Ag ⁺	none(2)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	327	
Chart XII									
Fur15C5-1	K ⁺	5.40	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206	
THF15C5-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.26	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.51	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388	
A15C5-1	Na ⁺	1.70	ISE			25?	MeOH (anhydrous)	143	
	Na ⁺	2.06	Pot			25	MeOH	312	
	Na ⁺	6.03	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
	K ⁺	5.52	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
	K ⁺	1.60	ISE			25	MeOH	391	
A15C5-2	NH ₄ ⁺	5.72	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
	NH ₄ ⁺	2.99	ISE			25?	MeOH (anhydrous)	143	
	H ⁺	9.58	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139	
	Li ⁺	<2.0	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139	
	Na ⁺	3.30	ISE			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139	
	Na ⁺	3.41	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139	
	Na ⁺	3.39	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO ₄ ⁻)	304	
	Na ⁺	3.41	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124	
	Na ⁺	3.39	ISE			25?	MeOH (anhydrous)	143	
	Na ⁺	2.19	US			25	MeOH [step 1: Na ⁺ + L = Na ⁺ L] ^c	392	
Na ⁺	1.17	US			25	MeOH [step 2: Na ⁺ L = (NaL) ⁺] ^c	392		
K ⁺	2.90	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref
	Ca ²⁺	3.24	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Sr ²⁺	3.63	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
A15C5-3	NH ₄ ⁺	3.22	ISE			25?	MeOH (anhydrous)	143
	NH ₄ ⁺	2.28	US			25	MeOH [step 1: NH ₄ ⁺ + L = NH ₄ ⁺ L] ^e	392
	NH ₄ ⁺	0.88	US			25	MeOH [step 2: NH ₄ ⁺ L = (NH ₄ L) ⁺] ^e	392
	Na ⁺	2.62	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO ₄ ⁻)	304
	Na ⁺	3.02	ISE			25	MeOH (anhydrous)	143, 393
A15C5-4	K ⁺	2.90	ISE			25	MeOH (anhydrous)	393
	Na ⁺	2.15	ISE			25?	MeOH (anhydrous)	143
A15C5-5	Na ⁺	2.76	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 394
	K ⁺	2.29	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 394
A15C5-6	Ca ⁺	2.71	ISE			25	MeOH·H ₂ O (9:1/w:w)	394
	Na ⁺	3.08	ISE			25	MeOH	395, 396
A15C5-7	K ⁺	2.82	ISE			25	MeOH	395, 396
	H ⁺	8.7	Pot			25	MeOH·H ₂ O (9:1)	140
A15C5-8	Na ⁺	2.6	ISE			25	MeOH·H ₂ O (9:1/v:v)	396
	Na ⁺	2.97	ISE			25	MeOH·H ₂ O (95:5)	140
	Na ⁺	3.06	ISE			25	MeOH	396
	K ⁺	2.3	ISE			25	MeOH·H ₂ O (9:1/v:v)	396
	K ⁺	2.65	ISE			25	MeOH·H ₂ O (95:5)	140
A15C5-9	K ⁺	2.86	ISE			25	MeOH	396
	H ⁺	8.90	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Li ⁺	2.34	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.62	ISE			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.95	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	K ⁺	3.71	Pot			25	MeOH·H ₂ O (95:5/v:v),139 0.1 M Me ₄ NCl	139
	Ca ²⁺	4.57	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Sr ²⁺	5.54	Pot			25	MeOH·H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.14	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	4.20	ISE			25?	MeOH (anhydrous)	143
A15C5-10	NH ₄ ⁺	2.51	ISE			25?	MeOH (anhydrous)	143
A15C5-11	Na ⁺	3.65	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
A15C5-12	Na ⁺	3.75	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
A15C5-13	Na ⁺	3.13	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
A15C5-14	Na ⁺	3.57	ISE			25	MeOH	397
A15C5-15	K ⁺	3.17	ISE			25	MeOH	397
	Na ⁺	1.81(2)	Cal	-18.4	-27	25	MeOH	305
	Na ⁺	0.86	NMR			20	MeOH	398
	K ⁺	1.70(2)	Cal	-32.1	-75	25	MeOH	305
	K ⁺	0.97	NMR			20	MeOH	398
	Rb ⁺	1.36(2)	Cal	-30.6	-77	25	MeOH	305
	Cs ⁺	0.81	NMR			20	MeOH	398
	Sr ²⁺	2.53(2)	Cal	-18.0	-12	25	MeOH	305
	Ba ²⁺	1.64(1)	Cal	-3.7	19	25	MeOH	305
	Ba ²⁺	2.52(2)	Cal	-13.7	2	25	MeOH	305
A15C5-16	Ag ⁺	3.86	Cal	-26.6	-16	25	MeOH	305
	Ag ⁺	3.94	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	3.86	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	2.12	ISE			25?	MeOH (anhydrous)	143
	Li ⁺	4.63	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	5.68	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	2.77	ISE			25?	MeOH (anhydrous)	143
	Ag ⁺	3.69	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	4.46	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	4.70	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-17	Ag ⁺	3.45	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.75	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	5.04	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-18	Ag ⁺	3.06	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	4.31	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	4.52	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-19	Ag ⁺	3.01	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	5.22	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	5.80	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-20	Na ⁺	3.54	ISE			25?	MeOH (anhydrous)	143
	Ag ⁺	4.22	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	4.82	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-21	Na ⁺	5.74	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Ag ⁺	3.88	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.39	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A15C5-22	Na ⁺	3.20	CyVol			25?	MeCN, 0.1 M Bu ₄ NClO ₄ (Na ⁺ + L -> NaL ⁺)	400
	Na ⁺	7.59	CyVol			25?	MeCN, 0.1 M Bu ₄ NClO ₄ (Na ⁺ + L ⁻ -> NaL)	400
	Na ⁺	3.20	NMR			25?	MeCN	143
A15C5-23	Na ⁺	4.39	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	2.40	ISE			25	MeOH	143, 337
	Ag ⁺	2.47	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Ag ⁺	2.47	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A15C5-25	Li ⁺	3.70	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	3.21	NMR			25?	MeCN	143
	Na ⁺	3.97	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	2.30	ISE			25	MeOH	143, 337
A15C5-26	Ag ⁺	2.92	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	H ⁺	9.69(1)	Spec			25	H ₂ O, 0.1 M Me ₄ NCl	401
A15C5-27	H ⁺	5.79(2)	Spec			25	H ₂ O, 0.1 M Me ₄ NCl	401
	H ⁺	10.2(1)	Spec			25	Diox-H ₂ O (2:8/v:v)	402
A15C5-28	H ⁺	5.55(2)	Spec			25	Diox-H ₂ O (2:8/v:v)	402
	Na ⁺	3.08	ISE			25	MeOH (anhydrous)	393
A15C5-29	K ⁺	2.93	ISE			25	MeOH (anhydrous)	393
	Li ⁺	2.83	Fluor			25	MeCN	403
A15C5-30	Na ⁺	2.23	Fluor			25	MeCN	403
	K ⁺	2.2	Fluor			25	MeCN	403
	Mg ²⁺	2.68	Fluor			25	MeCN	403
	Ca ²⁺	4.14	Fluor			25	MeCN	403
	Ba ²⁺	3.62	Fluor			25	MeCN	403
	H ⁺	8.82	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
A15C5-31	Li ⁺	1.96	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.73	ISE			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.81	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Na ⁺	3.66	ISE			25	MeOH-H ₂ O (9:1/v:v), (anion = ClO ₄ ⁻)	304
	Na ⁺	3.88	ISE			25	MeOH (anhydrous)	143, 310
	K ⁺	3.73	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	K ⁺	3.95	ISE			25	MeOH (anhydrous)	310
	Ca ²⁺	3.67	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	Sr ²⁺	5.17	Pot			25	MeOH-H ₂ O (95:5/v:v), 0.1 M Me ₄ NCl	139
	NH ₄ ⁺	3.14	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	4.17	ISE			25	MeOH-H ₂ O (9:1/v:v), (anion = ClO ₄ ⁻)	304
A15C5-32	Na ⁺	4.54	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	2.63	US			25	MeOH [step 1: Na ⁺ + L = Na ⁺ L] ^e	392
	Na ⁺	1.90	US			25	MeOH [step 2: Na ⁺ L = (NaL) ⁺] ^e	392
	K ⁺	4.68	ISE			25	MeOH	391
	Ca ⁺	4.06	ISE			25	MeOH-H ₂ O (9:1/v:v), (anion = ClO ₄ ⁻)	304
	NH ₄ ⁺	3.19	ISE			25?	MeOH (anhydrous)	143
A15C5-33	Na ⁺	4.32	ISE			25?	MeOH (anhydrous)	143
	NH ₄ ⁺	3.38	ISE			25?	MeOH (anhydrous)	143
A15C5-34	Na ⁺	4.15	ISE			25?	MeOH (anhydrous)	143
	NH ₄ ⁺	3.48	ISE			25?	MeOH (anhydrous)	143
A15C5-35	Na ⁺	4.19	ISE			25?	MeOH (anhydrous)	143
	NH ₄ ⁺	3.49	ISE			25?	MeOH (anhydrous)	143
A15C5-36	Na ⁺	3.52	ISE			25?	MeOH (anhydrous)	143
	NH ₄ ⁺	3.04	ISE			25?	MeOH (anhydrous)	143
A15C5-37	Na ⁺	3.83	ISE			25	MeOH	395, 396
	K ⁺	3.58	ISE			25	MeOH	395, 396
A15C5-38	Na ⁺	4.26	ISE			25	MeOH	395, 396
	K ⁺	4.57	ISE			25	MeOH	395, 396
A15C5-39	Na ⁺	4.36	ISE			25	MeOH	395, 396
	K ⁺	4.74	ISE			25	MeOH	395, 396
A15C5-40	Na ⁺	3.2	ISE			25	MeOH-H ₂ O (9:1/v:v)	396
	Na ⁺	3.76	ISE			25	MeOH	396
	K ⁺	2.9	ISE			25	MeOH-H ₂ O (9:1/v:v)	396
	K ⁺	3.55	ISE			25	MeOH	396
A15C5-41	Na ⁺	3.5	ISE			25	MeOH-H ₂ O (9:1/v:v)	396
	Na ⁺	4.21	ISE			25	MeOH	396
	K ⁺	3.4	ISE			25	MeOH-H ₂ O (9:1/v:v)	396
	K ⁺	4.46	ISE			25	MeOH	396
A15C5-42	Na ⁺	3.43	ISE			25	MeOH-H ₂ O (9:1/w:w)	394
	K ⁺	3.64(1)	ISE			25	MeOH-H ₂ O (9:1/w:w)	394
	K ⁺	3.34(2)	ISE			25	MeOH-H ₂ O (9:1/w:w)	394
	Cs ⁺	3.15	ISE			25	MeOH-H ₂ O (9:1/w:w)	394
A15C5-43	Na ⁺	3.54	ISE			25	MeOH	397
	K ⁺	3.37	ISE			25	MeOH	397
A15C5-44	Na ⁺	4.21	ISE			25	MeOH	397
	K ⁺	4.15	ISE			25	MeOH	397
A15C5-45	Na ⁺	3.80	ISE			25	MeOH	397
	K ⁺	4.36	ISE			25	MeOH	397
A15C5-46	Na ⁺	3.18	ISE			25	MeOH (anhydrous)	393
	K ⁺	3.04	ISE			25	MeOH (anhydrous)	393
A15C5-47	Na ⁺	3.06	ISE			25	MeOH (anhydrous)	393
	K ⁺	2.75	ISE			25	MeOH (anhydrous)	393
A15C5-48	Na ⁺	1.60	ISE			25	H ₂ O, 0.1 M Me ₄ NBr	404
	Na ⁺	4.10	ISE			25	MeOH (anhydrous)	310
A15C5-49	K ⁺	4.03	ISE			25	MeOH (anhydrous)	310
	Na ⁺	4.12	ISE			25	MeOH (anhydrous)	310
A15C5-50	K ⁺	4.03	ISE			25	MeOH (anhydrous)	310
	Na ⁺	<1.5	ISE			25	MeOH (anhydrous)	310
	K ⁺	<1.5	ISE			25	MeOH (anhydrous)	310

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K.mol	T, °C	conditions ^c	ref
A15C5-51	Na ⁺	4.10	ISE			25	MeOH	391
	K ⁺	4.03	ISE			25	MeOH	391
A15C5-52	Na ⁺	5.41	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	K ⁺	4.98	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	NH ₄ ⁺	4.78	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
A15C5-53	Na ⁺	6.02	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	K ⁺	5.42	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	NH ₄ ⁺	5.27	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
A15C5-54	Na ⁺	5.84	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	K ⁺	5.45	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
	NH ₄ ⁺	5.53	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	390
A15C5-55	Na ⁺	6.11	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	K ⁺	5.61	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	NH ₄ ⁺	4.98	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
A15C5-56	Na ⁺	4.73	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	K ⁺	4.54	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	NH ₄ ⁺	4.45	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
A15C5-57	Na ⁺	4.96	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	K ⁺	4.64	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
	NH ₄ ⁺	4.56	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390
A ₂ 15C5-1	H ⁺	10.31(1)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	H ⁺	9.11(2)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Li ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Li ⁺	4.12	Cal	-16.3	23.8	25	PC	293
	Na ⁺	3.19	Pot			25	DEF	407
	Na ⁺	2.88	Pot			25	DMAC	407
	Na ⁺	2.10	Pot			25	DMF	407
	Na ⁺	nm	Cal			25	MeCN	408
	Na ⁺	3.8	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	Na ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Na ⁺	<1.5	ISE			25	MeOH (anhydrous)	410, 411
	Na ⁺	4.83	Cal	-18.1	31.2	25	PC	293
	K ⁺	2.11	Cal	-10.8	4.0	25	MeCN	408
	K ⁺	3.0	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	K ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	K ⁺	<1.5	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	2.25	ISE	-7.7(Cal)	-17.1	25	PC, 0.05 M Et ₄ NClO ₄	107
	Rb ⁺	nm	Cal			25	MeCN	408
	Rb ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Rb ⁺	nm	Cal			25	PC	293
	Cs ⁺	nm	Cal			25	MeCN	408
	Cs ⁺	nm	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	Cs ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Cs ⁺	nm	Cal			25	PC	293
	Mg ²⁺	3.30	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.1-10.5	146
	Ca ²⁺	2.56	Cal	-4.3	34	25	MeOH	412
	Ca ²⁺	3.13	Pot			25	MeOH	413
	Ca ²⁺	3.13	Pot			25	MeOH	413
	Ca ²⁺	2.53	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ca ²⁺	3.64	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.6-10.5	146
	Sr ²⁺	3.14(1)	Cal	10.3	28	25	MeOH	412
	Sr ²⁺	2.51(2)	Cal	-12.4	6	25	MeOH	412
	Sr ²⁺	2.97	Pot			25	MeOH	413
	Sr ²⁺	3.69	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.2-10.5	146
	Ba ²⁺	>6.5	Pot	-35.0(Cal)		25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ba ²⁺	2.72(1)	Cal	>0		25	MeOH	412
	Ba ²⁺	2.42(2)	Cal	-11.3(1+2)	8	25	MeOH	412
	Ba ²⁺	2.72	Cal	4.1	65.8	25	MeOH (anion = ClO ₄ ⁻)	414
	Ba ²⁺	3.52	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.9-10.6	146
	Ba ²⁺	2.78	Pot			25	MeOH	413
	Ce ³⁺	5.7	Cal	-69.5	-123.4	25	MeCN (anion = NO ₃ ⁻)	321
	Pr ³⁺		Pot	-28.0	167	25	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	13.5	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Pr ³⁺	13.4	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ₂ ³⁺	13.2	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺		Pot	-20.9	197	25	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	14.2	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	14.1	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	13.9	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Co ²⁺	6.9	Pot	5.2(Cal)	149	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Ni ²⁺	4.90	Pot	23.8(Cal)	173	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Cu ²⁺		Cal	-32.6	70.8	25	MeOH	416
	Cu ²⁺	9.45	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Ag ⁺	5.88	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.82	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.05)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.51	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.1)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.36	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.2)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.39	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.3)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.53	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.5)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	4.91	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.7)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	5.78	Pot			25	MeCN·H ₂ O, (X _{MeCN} = 0.9)	
							0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.11	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.55	ISE	-31.7(Cal)	18.5	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ag ⁺	7.45	Pot			25	MeOH	413
	Ag ⁺	7.63(1)	Pot	-34.6(Cal)	30.2	25	MeOH, 0.05 M Et ₄ NClO ₄	418
	Ag ⁺	3.81(2)	Pot	-4.5(Cal)	58	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Ag ⁺		Pot	-33.5	134	25	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺		Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	13.0	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	12.8	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	12.7	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Zn ²⁺	7.42	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	419, 332
	Pb ²⁺	6.71	ISE	-18.1(Cal)	67	25	MeOH, 0.05 M Et ₄ NClO ₄	332,420(logK)
	Pb ²⁺	7.87	Pot	-18.1(Cal)	88.9	25	H ₂ O, 1.0 M NaClO ₄	421
	UO ₂ ²⁺	none	Pot			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	4.96(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	3.60(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
A ₂ 15C5-2	Sr ²⁺	1.62	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
A ₂ 15C5-3	Ba ²⁺	3.30	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
A ₂ 15C5-4	H ⁺	8.30(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	H ⁺	7.62(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Ca ²⁺	3.86	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Sr ²⁺	3.46	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Ba ²⁺	3.19	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Cu ²⁺	7.88	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Zn ²⁺	6.50	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Cd ²⁺	7.13	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
	Pb ²⁺	8.26	Pot			25	H ₂ O, 0.1 M NaNO ₃	286
A ₂ 15C5-5	Na ⁺	>4.7	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	K ⁺	4.2	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
A ₂ 15C5-6	Cs ⁺	2.3	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	Na ⁺	4.2	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	K ⁺	3.5	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
	Cs ⁺	nm	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409
A ₂ 15C5-7	Na ⁺	5.09	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	4.86	ISE			25	MeOH (anhydrous)	410, 411
	Ca ²⁺	4.97	ISE			25	MeOH	411
A ₂ 15C5-8	H ⁺	9.067(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	H ⁺	8.544(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	H ⁺	1.75(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	H ⁺	<1(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	H ⁺	9.02(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424
	H ⁺	8.79(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424
	H ⁺	2.95(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424
	H ⁺	8.63(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	H ⁺	8.35(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	H ⁺	2.3(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	Li ⁺	2.139	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	Li ⁺	1.15(LiHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	Na ⁺	2.85	ISE			25	H ₂ O, 0.1 Me ₄ NBr	404
	Na ⁺	2.72	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	Na ⁺	0.85(NaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	K ⁺	1.69	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	Mg ²⁺	7.534	Pot	15.9(Cal)	197	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425
	Mg ²⁺	7.42	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424
	Mg ²⁺	6.7	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	
							(slow equilibrium)	404
	Ca ²⁺	8.68	Pot	-15.1(Cal)	117	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425
	Ca ²⁺	8.74	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424
	Ca ²⁺	1.22(Ca ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423
	Ca ²⁺	8.06	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	Sr ²⁺	8.023	Pot	-24.3(Cal)	71.1	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Sr ²⁺	1.967(Sr ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Sr ²⁺	7.91	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Sr ²⁺	7.20	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
	Ba ²⁺	7.412	Pot	·24.7(Cal)	58.6	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Ba ²⁺	1.22(Ba ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Ba ²⁺	7.31	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Ba ²⁺	6.74	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
	Y ³⁺	10.85	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	La ³⁺	10.11	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Ce ³⁺	10.89	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Pr ³⁺	11.31	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Nd ³⁺	11.60	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Sm ³⁺	11.72	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Eu ³⁺	11.85	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Eu ³⁺	12.23	Solv Extr. Rad			25	H ₂ O, 0.1 M Me ₄ NCl	427, 428	
	Gd ³⁺	11.66	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Tb ³⁺	11.52	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Dy ³⁺	11.55	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Ho ³⁺	11.34	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Er ³⁺	11.15	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Tm ³⁺	10.79	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Yb ³⁺	10.76	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Lu ³⁺	10.33	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 426	
	Th ⁴⁺	16.26	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	427	
	Pu ⁴⁺	21.52	Solv Extr. Rad			25	H ₂ O, 0.1 M Me ₄ NCl	427	
	Am ³⁺	12.86	Solv Extr. Rad			25	H ₂ O, 0.1 M Me ₄ NCl	427, 428	
	Mn ²⁺	12.111	Pot	-12.6(Calc'd)	188	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Fe ²⁺	~13.0	Pot	·14.6(Calc'd)	197	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Co ²⁺	13.72	Pot	·15.1(Cal)	213	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Co ²⁺	2.65(Co ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Co ²⁺	12	Pot			25	H ₂ O, 0.1 M KNO ₃ (slow equilibrium)	404	
	Ni ²⁺	nm	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
	Ni ²⁺	12.374	Pot	0(Cal)	238	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Ni ²⁺	1.926(Ni ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Ni ²⁺	12.23	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Cu ²⁺	17.79	Pot	-38.5(Cal)	209	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Cu ²⁺	5.0(Cu ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Cu ²⁺	16.02	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Cu ²⁺	>14	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
	Zn ²⁺	14.442	Pot	-21.3(Cal)	205	25	H ₂ O, 0.1 M Me ₄ NNO ₃	423, 425	
	Zn ²⁺	2.908(Zn ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Zn ²⁺	14.08	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Zn ²⁺	12	Pot			25	H ₂ O, 0.1 M KNO ₃ (slow equilibrium)	404	
	Cd ²⁺	13.432	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Cd ²⁺	2.188(Cd ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	429	
	Cd ²⁺	12.95	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Ga ³⁺	13.96	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
	Pb ²⁺	13.255	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Pb ²⁺	2.435(Pb ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	423	
	Pb ²⁺	12.91	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424	
A ₂ 15C5-9	Na ⁺	5.34	ISE			25	MeOH	411	
	K ⁺	4.65	ISE			25	MeOH	411	
	Ca ²⁺	6.04	ISE			25	MeOH	411	
A ₂ 15C5-10	Li ⁺	4.19	Cal	·31.1	·24.5	25	PC	293	
	Na ⁺	2.59	ISE			25	MeOH (anhydrous)	410, 411	
	Na ⁺	4.66	Pot	·35.6(Cal)	·30.5	25	PC, 0.05 M Et ₄ NClO ₄	293	
	K ⁺	2.12	ISE			25	MeOH (anhydrous)	410, 411	
	K ⁺	3.37	ISE	·30.3(Cal)	·37.6	25	PC, 0.05 M Et ₄ NClO ₄	293	
	Rb ⁺	2.55	Cal	·23.4	·29.9	25	PC	293	
	Cs ⁺	nm	Cal			25	PC	293	
A ₂ 15C5-11	Ca ²⁺	2.34	ISE			25	MeOH	411	
	Na ⁺	3.59	ISE			25	MeOH (anhydrous)	410, 411	
	K ⁺	3.13	ISE			25	MeOH (anhydrous)	410, 411	
	Ca ²⁺	3.04	ISE			25	MeOH	411	
A ₂ 15C5-12	Na ⁺	3.99	ISE			25	MeOH (anhydrous)	410, 411	
	K ⁺	3.87	ISE			25	MeOH (anhydrous)	410, 411	
	Ca ²⁺	3.45	ISE			25	MeOH	411	
Chart XIII									
K ₂ Phen15C5-1	Li ⁺	6.31	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Na ⁺	6.24	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	K ⁺	4.98	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Rb ⁺	4.34	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Cs ⁺	4.30	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Mg ²⁺	4.25	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Ca ²⁺	5.18	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	$T, ^\circ\text{C}$	conditions ^c	ref	
K ₂ A ₂ 15C5-1	Ba ²⁺	5.19	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	NH ₄ ⁺	4.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Na ⁺	nm	Cal			25	MeCN	408	
	K ⁺	nm	Cal			25	MeCN	408	
	Rb ⁺	nm	Cal			25	MeCN	408	
K ₂ A ₂ 15C5-2	Cs ⁺	nm	Cal			25	MeCN	408	
	Ba ²⁺	nm	Cal			25	MeCN	408	
	Ag ⁺	nm	Cal			25	MeCN	408	
	H ⁺	6.82(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	3.84(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	2.37(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	H ⁺	1.66(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	La ³⁺	7.23	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Ce ³⁺	7.40	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Pr ³⁺	7.74	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Nd ³⁺	8.08	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Sm ³⁺	8.58	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Eu ³⁺	8.80	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Gd ³⁺	8.61	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Td ³⁺	8.54	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Dy ³⁺	8.73	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	PyB ₂ A ₂ 15C5-1	Ho ³⁺	8.48	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
Er ³⁺		8.08	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
Tm ³⁺		7.98	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
Yb ³⁺		7.92	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
Lu ³⁺		7.71	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
H ⁺		4.41(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
H ⁺		2.18(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
Co ²⁺		<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
Ni ²⁺		<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
Cu ²⁺		6.84	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
PyB ₂ A ₂ 15C5-2	Zn ²⁺	3.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	431	
	Cd ²⁺	none	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄ (insoluble)	431	
	H ⁺	3.00(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	H ⁺	~2.15(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Co ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Ni ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Cu ²⁺	8.83	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	A ₃ 15C5-1	H ⁺	9.29(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	8.50(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	2.12(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
Ni ²⁺		8.93	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cu ²⁺		15.27	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Zn ²⁺		8.85	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cd ²⁺		10.05	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Pb ²⁺		10.07	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
A ₃ 15C5-2		H ⁺	8.87(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	6.70(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
	H ⁺	1.93(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ni ²⁺	7.76	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Cu ²⁺	12.68	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Zn ²⁺	7.21	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Cd ²⁺	9.15	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Pb ²⁺	9.09	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	A ₄ 15C5-1	H ⁺	9.56(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
		H ⁺	8.75(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
H ⁺		5.31(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
Cu ²⁺		20.07	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
Ni ²⁺		13.33	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
Zn ²⁺		13.11	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
Cd ²⁺		13.41	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
Pb ²⁺		12.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	82	
PyA ₄ 15C5-1		H ⁺	10.4(1)	Pot			20	H ₂ O, 0.1 M KCl	153
		H ⁺	8.4(2)	Pot			20	H ₂ O, 0.1 M KCl	153
	H ⁺	5.9(3)	Pot			20	H ₂ O, 0.1 M KCl	153	
	H ⁺	4.2(4)	Pot			20	H ₂ O, 0.1 M KCl	153	
	Mg ²⁺	4.7	Pot			20	H ₂ O, 0.1 M KCl	153	
	Ca ²⁺	5.5	Pot			20	H ₂ O, 0.1 M KCl	153	
	Sr ²⁺	4.7	Pot			20	H ₂ O, 0.1 M KCl	153	
	Co ²⁺	9.5	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cu ²⁺	10.8	Pot			20	H ₂ O, 0.1 M KCl	153	
	Zn ²⁺	9.1	Pot			20	H ₂ O, 0.1 M KCl	153	
	Cd ²⁺	9.1	Pot			20	H ₂ O, 0.1 M KCl	153	
	Pb ²⁺	9.7	Pot			20	H ₂ O, 0.1 M KCl	153	
	A ₈ 15C5-1	H ⁺	11.07(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
		H ⁺	9.81(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
		H ⁺	6.22(3)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
H ⁺		10.85(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		9.65(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		6.00(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		1.74(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		1.16(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		10.72(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		9.45(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432	
H ⁺		5.81(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
	H ⁺	10.39(1)	Pot			25	H ₂ O, 0.2 M KBr	433
	H ⁺	9.36(2)	Pot			25	H ₂ O, 0.2 M KBr	433
	H ⁺	6.06(3)	Pot			25	H ₂ O, 0.2 M KBr	433
	Mn ²⁺	10.65	Pot			25	H ₂ O, 0.2 M KBr	433
	Co ²⁺	16.76	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a
	Ni ²⁺ (H) ^d		Cal	-67.4		25	H ₂ O, pH 14	434, 435
	Ni ²⁺	18.1	Pot			35	H ₂ O, 0.2 M NaClO ₄	
							or Et ₄ NClO ₄	722a
	Cu ²⁺	28.3	Polg	-138	92.0	25	H ₂ O, 0.2 M NaClO ₄	432
	Cu ²⁺	28.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	176
	Ag ²⁺	43.6	Polg			25	H ₂ O, $I = 0.2$	230
	Zn ²⁺	19.1	Pot	-57.3	172	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	3.1	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(ZnHL)					(ZnL ²⁺ + H ⁺)	52
	Cd ²⁺	19.2	Pot			25	H ₂ O, 0.1 M NaNO ₃	176
	Cd ²⁺	19.2	Pot	-54.4	184	25	H ₂ O, 0.2 M NaClO ₄	52
	Cd ²⁺	3.4	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(CdHL)					(CdL ²⁺ + H ⁺)	52
	Hg ²⁺	28.5	Polg	-137	83.7	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	17.3	Pot	-41.8	188	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	3.8	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(PbHL)					(PbL ²⁺ + H ⁺)	52
A ₅ 15C5-2	Ag ²⁺	42.5	Polg			25	H ₂ O, $I = 0.2$	230
A ₅ 15C5-3	Cu ²⁺	15.1	Pot			25	H ₂ O, 0.1 M NaNO ₃	176
	Cd ²⁺	14.7	Pot			25	H ₂ O, 0.1 M NaNO ₃	176
K ₂ A ₅ 15C5-1	H ⁺	8.35(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	H ⁺	4.85(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	H ⁺	~2.6(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	Cu ²⁺	2.86	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(CuH ₁ L)					(Cu ²⁺ + L)	436
	Cu ²⁺	-5.52	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(CuH ₂ L)					(Cu ²⁺ + L)	436
B ₂ A ₂ T ₁₅ C5-1	Ag ⁺	4.85	Cond			25	DCE (anion = picrate)	437
	Ag ⁺	4.30	Cond			25	Me ₂ SO (anion = picrate)	437
	Ag ⁺	4.70	Cond			25	NMe (anion = picrate)	437
	Hg ²⁺	4.48(HgLPic)	Cond			25	DCE (anion = picrate)	437
	Hg ²⁺	4.30(HgLPic)	Cond			25	Me ₂ SO (anion = picrate)	327
	Hg ²⁺	4.30(HgLPic)	Cond			25	NMe (anion = picrate)	437
T ₂ 15C5-1	Na ⁺	nm	Cal			25	MeCN	298
	K ⁺	nm	Cal			25	MeCN	298
	Rb ⁺	nm	Cal			25	MeCN	298
	Cs ⁺	nm	Cal			25	MeCN	298
	Ba ²⁺	1.68	Pot	-1.9(Cal)	25.5	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Ag ⁺	6.05	ISE	-39.7(Cal)	-17.8	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Ag ⁺	9.85(1)	Pot	-65.1(Cal)	-31	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Ag ⁺	none(2)	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	327
K ₂ PyT ₂ 15C5-1	Eu ³⁺ , 3Fod ^e	1.48	NMR			25?	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	89
A ₂ T ₃ 15C5-1	H ⁺	8.697(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	H ⁺	5.16(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	16.02	Spec			25	H ₂ O, 0.1 M NaClO ₄	
							(log K value not corrected for CuHL formation)	260
B ₂ A ₂ T ₃ 15C5-1	Ag ⁺	4.32	Cond			25	DCE (anion = picrate)	437
	Ag ⁺	3.78	Cond			25	Me ₂ SO (anion = picrate)	437
	Hg ²⁺	5.70(HgLPic)	Cond			25	DCE (anion = picrate)	437
	Hg ²⁺	4.30(HgLPic)	Cond			25	Me ₂ SO (anion = picrate)	437
AT ₄ 15C5-1	H ⁺	8.14	Pot			25	H ₂ O, 0.1 M NaClO ₄	260
	Cu ²⁺	9.80	Spec			25	H ₂ O, 0.1 M NaClO ₄	260
T ₃ 15C5-1	Cu ⁺	15.0	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187
	Cu ²⁺	3.97	Spec	-13.6	30.4	25	H ₂ O, 0.01 M ClO ₄ ⁻	188
	Cu ²⁺	3.98	Spec	-10.9	39.5	25	H ₂ O, 0.025 M ClO ₄ ⁻	188
	Cu ²⁺	3.95	Spec	-10.6	40.3	25	H ₂ O, 0.05 M ClO ₄ ⁻	188
	Cu ²⁺	4.07	Spec	-9.16	47.3	25	H ₂ O, 0.1 M ClO ₄ ⁻	188
	Cu ²⁺	4.03	Spec	-11.8	38.0	25	H ₂ O, 0.25 M ClO ₄ ⁻	188
	Cu ²⁺	3.88	Spec	-3.89	61.9	25	H ₂ O, 0.5 M ClO ₄ ⁻	188
	Cu ²⁺	3.93	Spec	-7.78	49.4	25	H ₂ O, 1.0 M ClO ₄ ⁻	188
	Cu ²⁺	3.01	Spec	-12.2	36.0	25	H ₂ O, $I > 0$	188
(Phos) ₂ B ₂ 15C5-1	Li ⁺	2.30	Cond			22	EtOH·CHCl ₃ (1:1) (anion = acetate)	438
	Li ⁺	2.81	Cond			22	MeCN (anion = I ⁻)	438
	Li ⁺	3.12	Cond			22	MeCN (anion = ClO ₄ ⁻)	438
	Li ⁺	2.70	Cond			22	MeCN (anion = Cl ⁻)	438
	Na ⁺	2.13	Cond			22	EtOH·CHCl ₃ (1:1) (anion = acetate)	438
	Na ⁺	3.42	Cond			22	MeCN (anion = I ⁻)	438
	Na ⁺	2.64	Cond			22	MeCN (anion = ClO ₄ ⁻)	438
	K ⁺	2.04	Cond			22	EtOH·CHCl ₃ (1:1) (anion = acetate)	438
	K ⁺	2.85	Cond			22	MeCN (anion = I ⁻)	438
	K ⁺	1.78	Cond			22	MeCN (anion = ClO ₄ ⁻)	438
	Cs ⁺	2.02	Cond			22	EtOH·CHCl ₃ (1:1) (anion = acetate)	438
	Cs ⁺	2.26	Cond			22	MeCN (anion = I ⁻)	438
Spher-16C-1	CuCl ⁺	4.42	Spec			25?	Me ₂ CO	439
	H ⁺	13.5	Spec			25	Diox-H ₂ O (9:1)	440

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref	
Chart XIV									
Calix4-16C-1	H ⁺	>11(1)	Pot			30	H ₂ O	441, 442	
	H ⁺	4.0(2)	Pot			30	H ₂ O	441, 442	
	H ⁺	3.0(3)	Pot			30	H ₂ O	441, 442	
	H ⁺	<1(4)	Pot			30	H ₂ O	441, 442	
	UO ₂ ²⁺	3.2	Spec			25	H ₂ O, pH 6.5	443, 444	
	UO ₂ ²⁺	3.2	Spec			30	H ₂ O	445	
	(CH ₃) ₃ N ⁺ Ph	3.75	NMR	-25.9	-15.1	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	446, 447	
cation-5 ^f	4.32	NMR	-23.8	2.72	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	447		
Calix4-16C-2	H ⁺	>14(1)	Pot			30	H ₂ O·THF (7:3/v:v)	441, 442	
	H ⁺	13(2)	Pot			30	H ₂ O·THF (7:3/v:v)	441, 442	
	H ⁺	10.3(3)	Pot			30	H ₂ O·THF (7:3/v:v)	441, 442	
	H ⁺	<0(4)	Pot			30	H ₂ O·THF (7:3/v:v)	441, 442	
Calix4-16C-3	<i>n</i> -C ₄ H ₉ NH ₃ ⁺	4.38,4.98	Spec			25?	MeCN	448	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.11,4.67	Spec			25?	MeCN	448	
	<i>t</i> -C ₄ H ₉ CH ₂ NH ₃ ⁺	3.99,4.40	Spec			25?	MeCN	448	
	C ₂ H ₅ (CH ₃) ₂ CNH ₃ ⁺	4.15,4.70	Spec			25?	MeCN	448	
Calix4-16C-4	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.95,2.60	Spec			25?	MeCN	448	
Calix4-16C-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.34,4.68	Spec			25?	MeCN	448	
Calix4-16C-6	<i>t</i> -C ₄ H ₉ CH ₂ NH ₃ ⁺	4.41,4.78	Spec			25?	MeCN	448	
	UO ₂ ²⁺	3.1	Spec			25	H ₂ O, pH 6.5	443, 444	
Calix4-16C-7	UO ₂ ²⁺	3.1	Spec			30	H ₂ O	445	
	Li ⁺	5.6	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Li ⁺	2.7	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Na ⁺	5.6	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Na ⁺	5.1	Spec/Pot			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	K ⁺	4.4	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	K ⁺	3.1	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Rb ⁺	1.7	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Rb ⁺	3.6	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Cs ⁺	3.7	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Cs ⁺	3.1	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Ag ⁺	2.4	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	450	
	Ag ⁺	5.8	Spec			25	MeOH, 0.02 M Et ₄ NCl	450	
	Tl ⁺	2.4	Spec			25	MeOH, 0.02 M Et ₄ NCl	450	
	Calix4-16C-8	Li ⁺	1.8	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450
		Na ⁺	4.3	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450
K ⁺		5.0	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
Rb ⁺		1.6	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
Cs ⁺		<1	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
Calix4-16C-9	Li ⁺	6.3	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Na ⁺	6.1	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	K ⁺	5.1	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Rb ⁺	4.5	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Cs ⁺	5.6	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
Calix4-16C-10	Li ⁺	6.4	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Li ⁺	2.6	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Li ⁺	3.00	Spec			30	THF (anion = picrate)	451	
	Na ⁺	5.8	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Na ⁺	5.0	Spec/Pot			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Na ⁺	3.95	Spec			30	THF (anion = picrate)	451	
	K ⁺	4.5	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	K ⁺	2.4	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	K ⁺	3.08	Spec			30	THF (anion = picrate)	451	
	Rb ⁺	1.9	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Rb ⁺	3.1	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Cs ⁺	2.8	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450	
	Cs ⁺	2.7	Spec			25	MeOH, 0.02 M Et ₄ NCl	449, 450	
	Cs ⁺	1.60	Spec			30	THF (anion = picrate)	451	
	Ag ⁺	4.0	Spec			25	MeOH, 0.02 M Et ₄ NCl	450	
	Ag ⁺	2.5	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	450	
	Tl ⁺	1.6	Spec			25	MeOH, 0.02 M Et ₄ NCl	450	
cation-4 ^f	1.98	Spec			40	C ₂ H ₂ Cl ₄ (anion = BF ₄ ⁻)	372		
Calix4-16C-11	Na ⁺ ,Pic ⁻	3.75	Spec			20	THF	452	
Calix4-16C-12	Na ⁺ ,Pic ⁻	4.07	Spec			20	THF	453	
Py ₂ 16C4-1	K ⁺ ,Pic ⁻	3.95	Spec			20	THF	453	
	Li ⁺	4.3	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Na ⁺	3.6	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	K ⁺	3.8	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Rb ⁺	3.7	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Cs ⁺	4.2	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	NH ₄ ⁺	4.0	Sol Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
K ₂ BA ₂ 16C4-1	Ca ²⁺	2.94	NMR			25?	MeOH (anion = Br ⁻)	455	
B ₂ A ₂ 16C4-1	H ⁺	9.95(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	H ⁺	7.03(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	H ⁺	9.08(1)	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	H ⁺	6.50(2)	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	H ⁺	10.03(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	H ⁺	6.83(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Co ²⁺	5.23	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Co ²⁺	3.1	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Co ²⁺	4.10	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Co ²⁺	<4.5	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
	Ni ²⁺	5.74	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Ni ²⁺	4.85	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Ni ²⁺	4.97	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Cu ²⁺	8.35	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	211	
	Cu ²⁺	7.15	Pot			25	65% EtOH, 0.1 M Me ₄ NNO ₃	213	
	Cu ²⁺	7.09	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	213	
	Zn ²⁺	4.3	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217	
B ₂ A ₂ 16C4·2	H ⁺	10.41(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	H ⁺	7.62(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	H ⁺	~2.0(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	Co ²⁺	8.3	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	Ni ²⁺	10.6	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	Cu ²⁺	ppt	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	Zn ²⁺	8.1	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
	Cd ²⁺	7.3	Pot			25	H ₂ O, 0.1 M KNO ₃	278	
B ₂ A ₂ 16C4diene-1	UO ₂ ²⁺	7.12	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280	
B ₂ A ₂ 16C4diene-2	UO ₂ ²⁺	7.13	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280	
A ₄ 16C4·1	H ⁺	10.04(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191	
	H ⁺	9.69(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191	
	H ⁺	6.80(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191	
	H ⁺	3.54(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191	
A ₄ 16C4·2	H ⁺	10.73(1)	Pot	46.4(Cal)	49.0	25	H ₂ O, 0.5 M KNO ₃	283	
	H ⁺	9.85(2)	Pot	47.7(Cal)	28.2	25	H ₂ O, 0.5 M KNO ₃	283	
	H ⁺	6.83(3)	Pot	42.7(Cal)	-12.8	25	H ₂ O, 0.5 M KNO ₃	283	
	H ⁺	3.96(4)	Pot	33.5(cal)	-36.6	25	H ₂ O, 0.5 M KNO ₃	283	
	H ⁺	9.93(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	9.40(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	5.54(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	~3(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	9.93(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	9.40(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	5.54(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	3.0(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
A ₄ 16C4·3	Co ²⁺	11.70	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	10.58(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	9.46(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	5.63(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	~2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
A ₄ 16C4·4	Co ²⁺	9.04	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	10.77(1)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221, 456	
	H ⁺	9.63(2)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221, 456	
	H ⁺	6.90(3)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221, 456	
	H ⁺	5.38(4)	Pot			20	H ₂ O, 0.1 M KNO ₃	220, 221, 456	
	H ⁺	10.85(1)	Cal	-42.0	67.4	25	H ₂ O, 0.5 M KNO ₃	457, 458	
	H ⁺	9.80(2)	Cal	-44.8	37.9	25	H ₂ O, 0.5 M KNO ₃	457, 458	
	H ⁺	7.21(3)	Cal	-43.0	-5.62	25	H ₂ O, 0.5 M KNO ₃	457, 458	
	H ⁺	5.69(4)	Cal	-44.2	-39.3	25	H ₂ O, 0.5 M KNO ₃	457, 458	
	Ni ²⁺ (H) ^d		Cal	-40.6		25	H ₂ O	457	
	Ni ²⁺	13.23	Pot			25	H ₂ O, 0.5 M KNO ₃		
	Ni ²⁺	8.05(NiHL)	Pot			25	(octahedral complex) H ₂ O, 0.5 M KNO ₃	251	
	Ni ²⁺	18.80	Pot			25	H ₂ O, 0.5 M KNO ₃	251	
	Ni ²⁺	(NiHL)					(Ni ²⁺ + H ⁺ + L)	251	
	Cu ²⁺	20.92	Pot	-83.7(Cal)	119	25	H ₂ O, 0.5 M KNO ₃	457	
	Cu ²⁺	12.77 (CuHL)							
	Zn ²⁺	13.05	Pot	-29.7(Cal)	150	25	H ₂ O, 0.5 M KNO ₃	457	
	NH ₄ ⁺	2.88(1)	Pot			20	H ₂ O, pH > 8, 0.1 M KNO ₃	220	
	NH ₄ ⁺	2.78(2)	Pot			20	H ₂ O, pH > 8, 0.1 M KNO ₃	220	
	NH ₄ ⁺	2.78(1)	NMR			20	H ₂ O, 0.1 M KNO ₃	220	
	NH ₄ ⁺	2.48(2)	NMR			20	H ₂ O, 0.1 M KNO ₃	220	
K ₂ A ₄ 16C4·1	H ⁺	10.42(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	H ⁺	8.65(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243	
	Ni ²⁺	-10.92	Pot			35	H ₂ O, 0.2 M NaClO ₄		
	(NiH ₂ L)						(Ni ²⁺ + L)	243	
	Cu ²⁺	-4.89	Pot			25	H ₂ O, 0.2 M NaClO ₄		
	(CuH ₂ L)						(Cu ²⁺ + L)	436	
K ₂ A ₄ 16C4·2	H ⁺	9.70(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	H ⁺	8.05(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	Cu ²⁺	-10.36	Pot			25	H ₂ O, 0.2 M NaClO ₄		
	(CuH ₂ L)						(Cu ²⁺ + L)	436	
B ₂ A ₄ 16C4·1	H ⁺	9.93(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218	
	H ⁺	7.02(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218	
		1.71(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218	
	Zn ²⁺	6.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259	
	Cd ²⁺	6.2	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	218, 259	
CHART XV									
(1,3-B)A ₄ 16C4·1	Mg ²⁺	3.3	Spec			25	EtOH	460, 461	
	Ca ²⁺	2.9	Spec			25	EtOH	460, 461	
	Sr ²⁺	2.3	Spec			25	EtOH	460, 461	
	Ba ²⁺	1.6	Spec			25	EtOH	460, 461	
A ₂ T ₂ 16C4·1	H ⁺	10.49(1)	Pot	-46.1(Cal)	46.0	25	H ₂ O, 0.5 M KNO ₃	183, 184	
	H ⁺	7.74(2)	Pot	-44.9(Cal)	-2.5	25	H ₂ O, 0.5 M KNO ₃	183, 184	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	10.45(1)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	122, 185
	H ⁺	7.86(2)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	122, 185
	Cu ²⁺	10.56	Pot			25	H ₂ O, 0.5 M KNO ₃	183, 184
	Cu ⁺	14.35	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	122, 185
	Cu ⁺	none(CuHL)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	122, 185
	Cu ²⁺	10.15	Spec/CyVol			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄ · Spec, NaClO ₄ · CyVol)	122, 185
A ₂ T ₂ 16C4-2	H ⁺	9.95(1)	Pot	-50.5(Cal)	20.9	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	9.09(2)	Pot	-47.0(Cal)	16.3	25	H ₂ O, 0.5 M KNO ₃	183, 184
	H ⁺	9.89(1)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	185
	H ⁺	9.11(2)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	185
	Cu ²⁺	10.60	Pot			25	H ₂ O, 0.5 M KNO ₃	183, 184
	Cu ⁺	13.95	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	185
	Cu ⁺	10.17(CuHL)	Pot			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄)	185
	Cu ²⁺	10.27	Spec/CyVol			20	2% v/v MeCN, $I = 0.2$ (Na ₂ SO ₄ · Spec, NaClO ₄ · CyVol)	185
T ₄ 16C4-1	Cu ⁺	13.3	Calc'd			25	H ₂ O, 0.1 M ClO ₄ ⁻	187
	Cu ²⁺	2.20	Spec	-5.98	22.2	25	H ₂ O, 0.01 M ClO ₄ ⁻	188
	Cu ²⁺	3.15	Spec	-16.9	3.85	25	H ₂ O, 0.1 M ClO ₄ ⁻	188
	Cu ²⁺	~1.95	Spec			25	H ₂ O, $I > 0$	188
T ₄ 16C4-2	Ag ⁺	2.67	Cal	-47.0	-107	25	H ₂ O, 0.1 M HNO ₃	461a
	Hg ²⁺	9.92	Polg			25	MeCN, 0.1 M Bu ₄ NClO ₄	231
16C5-1	Li ⁺	4.48	Cond			25	MeCN	292
	Li ⁺	3.25	Cond			25	PC	292
	Na ⁺	0.78	Solv Extr?			25	H ₂ O	462
	Na ⁺	5.39	Cond			25	MeCN	292
	Na ⁺	4.10	Cond			25	MeOH	292
	Na ⁺	3.51	ISE			25	MeOH (anhydrous)	343, 463
	Na ⁺	5.7	Cond			25	PC	292
	K ⁺	0.4	Solv Extr?			25	H ₂ O	462
	K ⁺	3.57	Cond			25	MeCN	292
	K ⁺	2.92	Cond			25	MeOH	292
	K ⁺	2.63	ISE			25	MeOH (anhydrous)	343, 463
	K ⁺	3.34	Cond			25	PC	292
	Rb ⁺	2.94	Cond			25	MeCN	292
	Rb ⁺	2.46	Cond			25	MeOH	292
	Rb ⁺	2.59	Cond			25	PC	292
	Cs ⁺	2.38	Cond			25	MeCN	292
	Cs ⁺	2.09	Cond			25	MeOH	292
	Cs ⁺	2.17	Cond			25	PC	292
	Sr ²⁺	2.08	Solv Extr?			25	H ₂ O	462
	Ba ²⁺	1.84	Solv Extr?			25	H ₂ O	462
	Ag ⁺	1.10	Solv Extr?			25	H ₂ O	462
	Tl ⁺	0.73	Solv Extr?			25	H ₂ O	462
	Pb ²⁺	0.74	Solv Extr?			25	H ₂ O	462
16C5-2	Na ⁺	3.03	ISE			25	MeOH	464
	K ⁺	2.53	ISE			25	MeOH	464
16C5-3	Na ⁺	3.62	Pot			25	MeOH	463
	K ⁺	3.51	Pot			25	MeOH	463
16C5-4	Na ⁺	3.48	Pot			25	MeOH	463
	K ⁺	4.22	Pot			25	MeOH	463
16C5-5	Na ⁺	3.62	ISE			25	MeOH (anhydrous)	343
	K ⁺	3.51	ISE			25	MeOH (anhydrous)	343
16C5-6	Na ⁺	3.48	ISE			25	MeOH (anhydrous)	343
	K ⁺	4.22	ISE			25	MeOH (anhydrous)	343
16C5-7	Na ⁺	2.96	NMR			30	Py/Py- <i>d</i> ₅ (1:1), 0.07-0.17 M NaClO ₄	363
	Na ⁺	3.52	NMR			20	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	3.38	NMR			35	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	3.15	NMR			50	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.78	NMR			65	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.78	NMR			80	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	4.07	NMR			-10	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
16C5-8	K ⁺	2.08	ISE			25	MeOH	466
16C5-9	Na ⁺	3.31	ISE			25	MeOH (anhydrous)	343
	K ⁺	2.40	ISE			25	MeOH (anhydrous)	343
16C5-10	Na ⁺	3.60	ISE			25	MeOH (anhydrous)	343, 463
	K ⁺	2.87	ISE			25	MeOH (anhydrous)	343, 463
16C5-11	Na ⁺	3.94	ISE			25	MeOH (anhydrous)	343, 463
	K ⁺	3.40	ISE			25	MeOH (anhydrous)	343, 463
16C5-12	Na ⁺	4.20	ISE			25	MeOH (anhydrous)	343
	K ⁺	3.10	ISE			25	MeOH (anhydrous)	343
16C5-13	Na ⁺	2.59	ISE			25	MeOH (anhydrous)	343
	K ⁺	2.00	ISE			25	MeOH (anhydrous)	343
16C5-14	Na ⁺	3.00	ISE			25	MeOH (anhydrous)	343, 463
	K ⁺	2.37	ISE			25	MeOH (anhydrous)	343, 463
16C5-15	Na ⁺	3.04	ISE			25	MeOH (anhydrous)	343, 463
	K ⁺	2.76	ISE			25	MeOH (anhydrous)	343, 463
16C5-16	Na ⁺	3.78	ISE			25	MeOH (anhydrous)	343
	K ⁺	2.66	ISE			25	MeOH (anhydrous)	343
B ₂ 16C5-1	H ⁺	4.59	Pot			25?	H ₂ O	192
	H ⁺	7.98	Pot	-5.44	172	25	Diox·H ₂ O (3:1/v:v)	193
	H ⁺	8.01	Pot		172	35	Diox·H ₂ O (3:1/v:v)	193
	H ⁺	5.90	Pot			25	MeOH·H ₂ O (8:2/w:w), 0 M NaI	467, 468
	H ⁺	5.45	Pot			25	MeOH·H ₂ O (8:2/w:w), 1.8x10 ⁻³ M NaI	467

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	5.24	Pot			25	MeOH·H ₂ O (8:2/w:w), 3.07x10 ⁻³ M NaI	467
	H ⁺	4.93	Pot			25	MeOH·H ₂ O (8:2/w:w), 5.67x10 ⁻³ M NaI	467
	H ⁺	8.27	Pot			25	MeOH·H ₂ O (99:1/w:w)	469
	Li ⁺	none	Cal			25	MeOH·H ₂ O (8:2/w:w), pH 11	467
	Na ⁺	2.34	Cal	-34.73	-71.61	25	MeOH·H ₂ O (8:2/w:w), pH 2	467
	Na ⁺	2.35	Cal	-35.98	-75.68	25	MeOH·H ₂ O (8:2/w:w), pH 3	467
	Na ⁺	2.58	Cal	-29.16	-47.03	25	MeOH·H ₂ O (8:2/w:w), pH 4	467
	Na ⁺	2.71	Cal	-26.99	-38.61	25	MeOH·H ₂ O (8:2/w:w), pH 5	467
	Na ⁺	2.93	Cal	-27.49	-36.08	25	MeOH·H ₂ O (8:2/w:w), pH 6	467
	Na ⁺	3.27	Cal	-24.39	-19.09	25	MeOH·H ₂ O (8:2/w:w), pH 7	467
	Na ⁺	3.33	Cal	-25.48	-21.90	25	MeOH·H ₂ O (8:2/w:w), pH 9	467
	Na ⁺	3.27	Cal	-24.77	-20.36	25	MeOH·H ₂ O (8:2/w:w), pH 11	467
	Na ⁺	3.93	Cal			25	MeOH·H ₂ O (99:1/w:w)	469
	Na ⁺	2.72 (NaHL)	Cal			25	MeOH·H ₂ O (99:1/w:w)	469
	Na ⁺	4.02	Pot			25	MeOH·H ₂ O (99:1)	470
	Na ⁺	2.75 (NaHL)	Pot			25	MeOH·H ₂ O (99:1)	470
	K ⁺	2.23	Cal	-30.46	-59.25	25	MeOH·H ₂ O (8:2/w:w), pH 3	467
	K ⁺	3.11	Cal	-27.20	-32.29	25	MeOH·H ₂ O (8:2/w:w), pH 11	467
	K ⁺	3.71	Pot			25	MeOH·H ₂ O (99:1)	470
	K ⁺	2.78 (KHL)	Pot			25	MeOH·H ₂ O (99:1)	470
	Rb ⁺	2.81	Cal	-15.86	0.70	25	MeOH·H ₂ O (8:2/w:w), pH 11	467
	Cs ⁺	2.70	Cal	-4.69	36.22	25	MeOH·H ₂ O (8:2/w:w), pH 11	467
	Ca ²⁺	4.10	Pot			25	MeOH·H ₂ O (99:1)	470
	Ca ²⁺	2.34 (CaHL)	Pot			25	MeOH·H ₂ O (99:1)	470
	Ba ²⁺	2.71	Cal	-17.74	-7.58	25	MeOH·H ₂ O (8:2/w:w), pH 3	467
	Ba ²⁺	5.73	Cal	-20.21	41.98	25	MeOH·H ₂ O (8:2/w:w), pH 9	467
B ₂ 16C5-2	H ⁺	3.57	Pot			25	MeOH·H ₂ O (8:2/w:w)	469
	Na ⁺	3.2	Cal			25	MeOH·H ₂ O (8:2/w:w)	469
	Na ⁺	2.45 (NaHL)	Cal			25	MeOH·H ₂ O (8:2/w:w)	469
B ₂ 16C5-3	H ⁺	4.89	Pot			25?	H ₂ O	192
	H ⁺	6.72	Pot			25	MeOH·H ₂ O (8:2/w:w)	469
	Na ⁺	2.83	Cal	-31.0	-49.1	25	MeOH·H ₂ O (8:2/w:w)	469
	Na ⁺	2.38 (NaHL)	Cal			25	MeOH·H ₂ O (8:2/w:w)	469
B ₂ 16C5-4	H ⁺	5.30	Pot			25?	H ₂ O	192
	H ⁺	8.45	Pot	-20.9	234	25	Diox·H ₂ O (7:3/v:v)	193
	H ⁺	8.57	Pot		234	35	Diox·H ₂ O (7:3/v:v)	193
B ₂ 16C5-5	H ⁺	~2.6	Pot			25	MeOH·H ₂ O (8:2/w:w)	469
	Na ⁺	2.73	Cal			25	MeOH·H ₂ O (8:2/w:w)	469
B ₂ 16C5-6	H ⁺	6.41	Pot			25?	H ₂ O	192
	H ⁺	8.42	Pot			25	Diox·H ₂ O (7:3/v:v)	193
B ₂ 16C5-7	H ⁺	5.90	Pot			25?	H ₂ O	192
B ₂ 16C5-8	H ⁺	7.19	Pot			25?	H ₂ O	192
B ₂ 16C5-9	H ⁺	7.35	Pot			25?	H ₂ O	192
B ₂ 16C5-10	H ⁺	8.66	Pot	-14.2	-213	25	Diox·H ₂ O (7:3/v:v)	208
	H ⁺	8.74	Pot		-213	35	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-11	H ⁺	8.40	Pot	-14.2	-209	25	Diox·H ₂ O (7:3/v:v)	208
	H ⁺	8.48	Pot		-209	35	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-12	H ⁺	8.47	Pot	-15.9	-218	25	Diox·H ₂ O (7:3/v:v)	208
	H ⁺	8.56	Pot		-218	35	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-13	H ⁺	8.53	Pot	-12.1	205	25	Diox·H ₂ O (7:3/v:v)	193
	H ⁺	8.60	Pot		205	35	Diox·H ₂ O (7:3/v:v)	193
B ₂ 16C5-14	H ⁺	8.71	Pot			25	Diox·H ₂ O (7:3/v:v)	193
B ₂ 16C5-15	H ⁺	8.05	Pot	-24.7	-238	25	Diox·H ₂ O (7:3/v:v)	208
	H ⁺	8.19	Pot		-238	35	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-16	H ⁺	5.41	Pot	-1.67	-109	25	Diox·H ₂ O (7:3/v:v)	208
	H ⁺	5.42	Pot		-109	35	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-17	H ⁺	6.19	Pot			25	Diox·H ₂ O (7:3/v:v)	208
B ₂ 16C5-18	H ⁺	7.73	Pot	1.67	142	25	Diox·H ₂ O (7:3/v:v)	193
	H ⁺	7.72	Pot		142	35	Diox·H ₂ O (7:3/v:v)	193
Chart XVI								
(1,3-B)16C5-1	Ag ⁺	4.08	Spec			25?	MeOH (anion = ClO ₄ ⁻)	471
(1,3-B)16C5-2	Ag ⁺	4.91	Spec			25?	MeOH (anion = ClO ₄ ⁻)	471
PyB ₂ A ₂ 16C5-1	H ⁺	3.50(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
	H ⁺	~2.40(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
	Co ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
	Ni ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
	Cu ²⁺	9.48	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
A ₄ 16C5-1	H ⁺	9.35(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a
	H ⁺	7.90(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a
	H ⁺	4.90(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a
	H ⁺	~3(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a
	H ⁺	9.75(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	H ⁺	8.61(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	H ⁺	5.89(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	H ⁺	3.17(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Fe ²⁺	ppt	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Co ²⁺	11.42	Pot			35	H ₂ O, 0.2 M NaClO ₄	433a

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ni ²⁺	13.15	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Ni ²⁺	12.30	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Cu ²⁺	15.62	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	Cu ²⁺	22.18	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Zn ²⁺	11.72	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Cd ²⁺	13.44	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
	Hg ²⁺	<17	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	Pb ²⁺	10.07	Pot			25	H ₂ O, 0.1 M NaNO ₃	82
PyA ₄ 16C5-1	H ⁺	9.48(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	8.56(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	5.83(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	<2(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	9.27(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.35(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	5.68(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
K ₂ PyA ₄ 16C5-1	H ⁺	9.34(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	7.51(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-12.72	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	(NiH ₂ L)						(Ni ²⁺ + L)	243
K ₂ PyA ₄ 16C5-2	H ⁺	8.73(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	H ⁺	6.22(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	Cu ²⁺	-1.85	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	(CuH ₂ L)						(Cu ²⁺ + L)	436
A ₆ 16C5-1	H ⁺	10.86(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.71(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.50(3)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	10.64(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.49(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.28(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	1.71(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	1.45(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	10.42(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.27(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.06(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	10.42(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	9.27(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	7.06(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Na ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	K ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Mg ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Ca ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Co ²⁺	15.95	Pot			35	H ₂ O, 0.2 M NaClO ₄	196, 433a
	Ni ²⁺ (H) ^d		Cal	-96.2		25	H ₂ O, pH 14	434, 435
	Cu ²⁺	27.1	Polg	-137	58.6	25	H ₂ O, 0.2 M NaClO ₄	432
	Ag ²⁺	43.3	Polg			25	H ₂ O, $f = 0.2$	230
	Zn ²⁺	17..9	Pot	-56.5	155	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	3.7	Pot			25	H ₂ O, 0.2 M NaClO ₄	52
	(ZnHL)						(ZnL ²⁺ + H ⁺)	52
	Cd ²⁺	18.1	Pot	-54.4	163	25	H ₂ O, 0.2 M NaClO ₄	52
	Cd ²⁺	3.9	Pot			25	H ₂ O, 0.2 M NaClO ₄	52
	(CdHL)						(CdL ²⁺ + H ⁺)	52
	Hg ²⁺	27.4	Polg	-144	41.8	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	14.3	Pot	-43.9	126	25	H ₂ O, 0.2 M NaClO ₄	52
	Pb ²⁺	5.0	Pot			25	H ₂ O, 0.2 M NaClO ₄	52
	(PbHL)						(PbL ²⁺ + H ⁺)	52
A ₆ 16C5-2	H ⁺	10.64(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	H ⁺	9.37(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	H ⁺	2.0(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Na ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	K ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Mg ²⁺	2.5	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Ca ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
A ₆ 16C5-3	H ⁺	8.32(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	H ⁺	7.43(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	H ⁺	5.67(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	H ⁺	4.73(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
KA ₆ 16C5-1	H ⁺	9.99(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	9.03(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	5.96(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	2.5(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	H ⁺	9.68(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.65(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	5.71(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-4.39	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	(NiH ₂ L)						(Ni ²⁺ + L)	243
	Cu ²⁺	7.04(CuHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	Cu ²⁺	3.45	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	(CuH ₁ L)						(Cu ²⁺ + L)	436
	Zn ²⁺	10.7	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	Zn ²⁺	2.3	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	(ZnH ₁ L)						(Zn ²⁺ + L)	256
	Zn ²⁺	nm	Pot			25	H ₂ O, 0.1 M NaClO ₄	256
	(ZnH ₂ L)						(Zn ²⁺ + L)	256
	Cd ²⁺	11.6	Pot			25	H ₂ O, 0.1 M NaClO ₄	256

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
K ₂ A ₆ 16C5-1	Cd ²⁺	1.1 (CdH ₁ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (Cd ²⁺ + L)	256
	Hg ²⁺	22.82	Polg			25	H ₂ O, 0.2 M NaClO ₄	459
	Hg ²⁺	14.10 (HgH ₁ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
	H ⁺	9.10(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	8.47(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	~2(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	472
	H ⁺	9.01(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.69(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-8.59 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
	Cu ²⁺	11.99	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	Cu ²⁺	-1.80 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	436
K ₂ A ₆ 16C5-2	Hg ²⁺	10.14 (HgH ₁ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
	Hg ²⁺	10.34 (HgH ₁ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
	H ⁺	9.20(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.07(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
K ₂ A ₆ 16C5-3	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-9.33 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
	H ⁺	9.17(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.00(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
K ₂ A ₆ 16C5-4	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-10.62 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
	H ⁺	9.23(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	7.91(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
K ₂ A ₆ 16C5-5	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Hg ²⁺	10.03 (HgH ₁ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
K ₂ A ₆ 16C5-6	H ⁺	9.11(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	7.82(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-10.80 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
K ₂ A ₆ 16C5-7	H ⁺	10.28(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.75(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	4.91(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-7.89 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
	Cu ²⁺	14.04	Pot			25	H ₂ O, 0.2 M NaClO ₄	436
	Cu ²⁺	-1.59 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	436
	Hg ²⁺	11.46 (HgH ₁ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
K ₂ A ₆ 16C5-8	H ⁺	8.10(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	4.61(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	~2.4(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-13.66 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
A ₄ T16C5-1	H ⁺	9.33(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	8.85(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	4.49(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	3.2(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	9.03(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	8.65(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	4.28(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	3.0(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	9.33(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	8.55(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	4.49(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	~3.2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Fe ³⁺	10.29	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Co ²⁺	13.39	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
	Ni ²⁺	12.66	Pot			35	H ₂ O, 0.2 M NaClO ₄	180
K ₂ A ₄ T16C5-1	Cu ²⁺	24.14	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	Hg ²⁺	25.15	Pot			25	H ₂ O, 0.2 M NaClO ₄	180
	H ⁺	8.28(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	7.35(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	H ⁺	<2(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	243
	Ni ²⁺	-9.59 (NiH ₂ L)	Pot			35	H ₂ O, 0.2 M NaClO ₄ (Ni ²⁺ + L)	243
	Cu ²⁺	-2.82 (CuH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (Cu ²⁺ + L)	436
	Hg ²⁺	8.40 (HgH ₁ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ (Hg ²⁺ + L)	459
Chart XVII								
K ₄ B ₂ A ₆ 16C6-1 PhosB ₂ 16C6-1	Nd ³⁺	2.08	Cond			25?	DMF	474
	Ca ²⁺	2.53(1)	Cal	-13.4	3.5	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.27(2)	Cal	-8.6	14.5	25	MeCN (anion = SCN ⁻)	133

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
PhosB ₂ 16C6-2	Ca ²⁺	2.44(1)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.35(2)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	3.02(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	2.72(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	3.03(1)	Cal	-9.9	24.8	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.11(2)	Cal	-15.3	-10.9	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	3.14(1)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.82(2)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	3.6(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
Spher-17C2-1	Ca ²⁺	2.5(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Li ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
B ₂ A ₂ 17C4-1	Co ²⁺	<4.5	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217
	Zn ²⁺	4.1	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	217
B ₂ A ₂ 17C4-2	H ⁺	10.39(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	H ⁺	7.94(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	H ⁺	~1.9(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	Co ²⁺	6.8	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	Ni ²⁺	8.9	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	Cu ²⁺	ppt	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	Zn ²⁺	7.6	Pot			25	H ₂ O, 0.1 M KNO ₃	278
A ₄ 17C4-1	Cd ²⁺	7.1	Pot			25	H ₂ O, 0.1 M KNO ₃	278
	H ⁺	11.20(1)	Pot	43.5(Cal)	68.8	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	10.13(2)	Pot	46.4(Cal)	37.9	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	7.96(3)	Pot	45.6(Cal)	0.0	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	6.30(4)	Pot	45.6(Cal)	-32.2	25	H ₂ O, 0.5 M KNO ₃	283
	H ⁺	10.23(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
	H ⁺	9.66(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
	H ⁺	7.40(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
B17C5-1	H ⁺	5.31(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	191
	Na ⁺	1.84	Cal	-44.85	-115.3	25	MeOH-H ₂ O (8:2)	131
CHART XVIII								
B17C5-2	K ⁺	5.85	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Rb ⁺	5.30	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
B ₂ 17C5-1	Cs ⁺	4.89	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.15	PMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
	Na ⁺ ,TCNE ⁻		Spec	-9.2	40.6	-50 to +50	Toluene (anion = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-22.2	93.8	-50 to +50	<i>o</i> -Xylene (anion = tetracyanoethylene)	315
	Na ⁺ ,TCNE ⁻		Spec	-15.9	70.3	-50 to +50	<i>m</i> -Xylene (anion = tetracyanoethylene)	315
(2,3-Nap)17C5-1	Na ⁺	1.81	NMR			25?	MeOD- <i>d</i> ₃	209
	K ⁺	1.85	NMR			25?	MeOD- <i>d</i> ₃	209
	Rb ⁺	2.40	NMR			25?	MeOD- <i>d</i> ₃	209
	Cs ⁺	2.30	NMR			25?	MeOD- <i>d</i> ₃	209
(H ₄ Nap) ₂ 17C5-1	Li ⁺	4.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.79	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	4.08	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	3.65	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	3.44	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	3.54	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Fur17C5-1	K ⁺	6.70	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)
Thio17C5-1	Rb ⁺	5.67	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Cs ⁺	5.52	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.04	PMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
	K ⁺	6.70	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Rb ⁺	5.36	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
Thio17C5-2 17C5-1	Cs ⁺	5.63	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	K ⁺	5.52	Sol-PMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Li ⁺	4.8	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	Na ⁺	4.5	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	K ⁺	4.7	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	Rb ⁺	3.5	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	NH ₄ ⁺	4.8	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	CH ₃ NH ₃ ⁺	3.3	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
17C5-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.3	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	Li ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	Na ⁺	4.7	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	K ⁺	4.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
17C5-3	Rb ⁺	4.0	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	NH ₄ ⁺	5.0	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	CH ₃ NH ₃ ⁺	3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	Li ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	Na ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	K ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	Rb ⁺	3.9	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	NH ₄ ⁺	5.1	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	CH ₃ NH ₃ ⁺	3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
17C5-ene-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	Na ⁺	0.95	ISE			25	MeOH	479	
	K ⁺	1.40	ISE			25	MeOH	479	
A17C5-1	Na ⁺	1.34	ISE			25	MeOH	210	
	K ⁺	1.91	ISE			25	MeOH	210	
B ₂ A ₂ 17C5-1	H ⁺	8.97(1)	Pot			15	H ₂ O	480	
	H ⁺	6.50(2)	Pot			15	H ₂ O	480	
	H ⁺	8.97(1)	Pot			20	H ₂ O	480	
	H ⁺	6.33(2)	Pot			20	H ₂ O	480	
	H ⁺	8.71(1)	Pot			25	H ₂ O	480	
	H ⁺	6.22(2)	Pot			25	H ₂ O	480	
	H ⁺	8.45(1)	Pot			35	H ₂ O	480	
	H ⁺	6.01(2)	Pot			35	H ₂ O	480	
	H ⁺	8.23(1)	Pot			45	H ₂ O	480	
	H ⁺	5.78(2)	Pot			45	H ₂ O	480	
	H ⁺	9.16(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	6.19(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Co ²⁺	5.33(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Co ²⁺	4.42(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Ni ²⁺	6.50	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Ni ²⁺	6.50(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Ni ²⁺	5.45(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Cu ²⁺	10.04(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Cu ²⁺	8.27(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Zn ²⁺	5.62(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Zn ²⁺	4.42(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	482	
	Zn ²⁺	4.8	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483	
Cd ²⁺	5.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483		
UO ₂ ²⁺	8.89	Pot			15	H ₂ O	480		
UO ₂ ²⁺	8.86	Pot			20	H ₂ O	480		
UO ₂ ²⁺	8.77	Pot		-31.1	63.3	25	H ₂ O	480	
UO ₂ ²⁺	8.62	Pot				35	H ₂ O	480	
UO ₂ ²⁺	8.36	Pot				45	H ₂ O	480	
CHART XIX									
B ₂ A ₂ 17C5-2	Cu ²⁺	6.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484	
PyB ₂ A ₂ 17C5-1	H ⁺	3.73(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	H ⁺	~1.80(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Co ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Ni ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Cu ²⁺	7.36	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
B ₂ A ₃ 17C5-1	H ⁺	9.47(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	8.27(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	2.16(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	9.47(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485	
	H ⁺	8.27(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485	
	H ⁺	2.35(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485	
	H ⁺	9.69(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	8.45(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	2.01(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	Mn ²⁺	2.91(1)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487	
	Mn ²⁺	1.53(2)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487	
	Mn ²⁺	3.02(1)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487	
	Mn ²⁺	1.62(2)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487	
	Mn ²⁺	3.22(1)	OSM/Spec			45	MeOH (anion = NO ₃ ⁻)	487	
	Mn ²⁺	1.72(2)	OSM/Spec			45	MeOH (anion = NO ₃ ⁻)	487	
	Co ²⁺	7.55	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Co ²⁺	13.07 (CoHL)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl (Co ²⁺ + L + H ⁺)	481	
	Co ²⁺	7.7	Pot			25	95% MeOH	215	
	Co ²⁺	3.45(1)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487	
	Co ²⁺	2.32(2)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487	
Co ²⁺	3.50(1)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487		
Co ²⁺	2.36(2)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487		
Co ²⁺	3.58(1)	OSM/Spec			45	MeOH (anion = NO ₃ ⁻)	487		
Co ²⁺	2.71(2)	OSM/Spec			45	MeOH (anion = NO ₃ ⁻)	487		
Ni ²⁺	9.96	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ni ²⁺	9.89	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	481
	Ni ²⁺	9.9	Pot			25	95% MeOH	215
	Ni ²⁺	3.97(1)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487
	Ni ²⁺	2.61(2)	OSM/Spec			45	MeOH (anion = Cl ⁻)	487
	Ni ²⁺	3.99(1)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487
	Ni ²⁺	2.71(2)	OSM/Spec			45	MeOH (anion = SO ₄ ²⁻)	487
	Cu ²⁺	14.2	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484
	Cu ²⁺	14.41	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481, 485
	Cu ²⁺	17.32	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	
		(CuHL)					(Cu ²⁺ + L + H ⁺)	485
	Cu ²⁺	14.0	Pot			25	95% MeOH	215
	Ag ⁺	(1)	Cal	·49		30	MeCN	277
	Ag ⁺	2.80(2)	Cal	·40		30	MeCN	277
	Ag ⁺	8.7	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Zn ²⁺	7.48	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516
	Zn ²⁺	3.72						
		(ZnHL)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Zn ²⁺	7.5	Pot			25	95% MeOH	215
	Cd ²⁺	8.66	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516
	Cd ²⁺	4.17						
		(CdHL)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Pb ²⁺	8.1	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	468
B ₂ A ₃ 17C5-2	H ⁺	9.47(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	8.25(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	1.57(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	9.32(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485
	H ⁺	8.09(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485
	H ⁺	1.97(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	485
	H ⁺	9.32(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	H ⁺	8.13(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	H ⁺	2.09(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	Co ²⁺	5.48	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	Co ²⁺	12.55	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	
		(CoHL)					(Co ²⁺ + L + H ⁺)	481
	Ni ²⁺	6.89	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	Cu ²⁺	14.31	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481, 485
	Cu ²⁺	17.29	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	
		(CuHL)					(Cu ²⁺ + L + H ⁺)	485
	Zn ²⁺	5.59	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Zn ²⁺	3.12						
		(ZnHL)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
B ₂ A ₃ 17C5-3	Cd ²⁺	7.94	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Zn ²⁺	5.6	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483
	Cd ²⁺	7.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483
B ₂ A ₃ 17C5-4	H ⁺	10.05(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	7.57(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	1.94(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	H ⁺	9.90(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	H ⁺	7.31(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	H ⁺	2.60(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	Ni ²⁺	<7 ppt	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481
	Zn ²⁺	5.12	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Cd ²⁺	6.09	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
B ₂ A ₃ 17C5-5	H ⁺	10.33(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	H ⁺	9.30(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	H ⁺	3.70(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	H ⁺	~2.1(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	Co ²⁺	14.2	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	Ni ²⁺	>15	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	Cu ²⁺	ppt	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	Zn ²⁺	14.5	Pot			25	H ₂ O, 0.1 M KNO ₃	287
	Cd ²⁺	ppt	Pot			25	H ₂ O, 0.1 M KNO ₃	287
B ₂ A ₃ 17C5-6	Co ²⁺	<3.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Ni ²⁺	<3.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Cu ²⁺	ppt	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Ag ⁺	9.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Zn ²⁺	~3.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Cd ²⁺	~3.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
	Pb ²⁺	~4.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	488
B ₂ A ₄ 17C5-1	Cu ²⁺	14.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484
A ₈ 17C5-1	H ⁺	10.55(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.85(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.58(3)	Pot			15	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	10.32(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.62(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.36(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	4.10(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	2.38(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	10.10(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	9.38(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	H ⁺	7.13(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	432
	Ni ²⁺ (H) ^d		Cal	·81.2		25	H ₂ O, pH 14	434, 435
	Cu ²⁺	23.8	Polg	·114	75.3	25	H ₂ O, 0.2 M NaClO ₄	432
	Zn ²⁺	15.8	Pot	·53.1	126	25	H ₂ O, 0.2 M NaClO ₄	52
	Zn ²⁺	4.3	Pot			25	H ₂ O, 0.2 M NaClO ₄	
		(ZnHL)					(ZnL ²⁺ + H ⁺)	52
	Cd ²⁺	15.5	Pot	·52.7	121	25	H ₂ O, 0.2 M NaClO ₄	52

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref		
A ₅ 17C5-2	Cd ²⁺	4.2 (CdHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (CdL ²⁺ + H ⁺)	52		
	Hg ²⁺	26.5	Polg	-140	37.7	25	H ₂ O, 0.2 M NaClO ₄	52		
	Pb ²⁺	11.6	Pot	-41.4	126	25	H ₂ O, 0.2 M NaClO ₄	52		
	Pb ²⁺	5.3 (PbHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄ (PbL ²⁺ + H ⁺)	52		
	H ⁺	10.50(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
	H ⁺	9.73(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
	H ⁺	7.97(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
	Cd ²⁺	15.38	Pot			35	H ₂ O, 0.2 M NaClO ₄	196		
KBA ₅ 17C5-1	H ⁺	9.9(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	H ⁺	9.2(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	H ⁺	5.9(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	H ⁺	2.2(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	Cu ²⁺	15.3	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	Cu ²⁺	12.2 (CuHL)	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	Zn ²⁺	8.1	Pot			25	H ₂ O, 0.1 M NaClO ₄	489		
	Cu ²⁺	16.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484		
	Ni ²⁺	5.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490		
	Cu ²⁺	7.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484		
B ₂ A ₅ 17C5-1	Ag ⁺	(1)	Cal	-51		30	MeCN	277		
	Ag ⁺	2.87(2)	Cal	-36		30	MeCN	277		
	Zn ²⁺	<4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490		
	Cd ²⁺	4.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490		
	Cu ²⁺	14.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484		
	B ₂ A ₄ T17C5-1	Eu ³⁺ , 3Fod ⁻	1.65	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethylacetone)	89	
		Cu ²⁺	6.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484	
		B ₂ A ₃ T ₂ 17C5-1	Ni ²⁺	9.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	481
			Ni ²⁺	9.5	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490
			Cu ²⁺	15.6	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484
Ag ⁺				Cal	-69		30	MeCN	277	
Zn ²⁺			6.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490a	
Cd ²⁺			7.8	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	490a	
Cu ²⁺			8.1	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	484	
Ag ⁺				Cal	-72		30	MeCN	277	
17C6-1	Na ⁺		2.5	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86	
	K ⁺		3.3	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86	
	Rb ⁺	3.0	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86		
	Cs ⁺	2.3	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86		
	CaCl ⁺	2.4	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86		
	K ₂ Naphthyr17C6-1	Li ⁺	4.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
		Na ⁺	4.77	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
		K ⁺	4.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
		Rb ⁺	4.54	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
		Cs ⁺	4.62	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Mg ²⁺		4.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
Ca ²⁺		5.14	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
Ba ²⁺		5.25	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
Cu ²⁺		4.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
Ag ⁺		7.10	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
Phos17C7-1	NH ₄ ⁺	4.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429		
	H ⁺	1.37	Cal			25	H ₂ O	205		
	Ca ²⁺	1.15	Cal			25	H ₂ O	205		
	Ni ²⁺	2.44	Cal			25	H ₂ O	205		
	Cu ²⁺	1.02	Cal			25	H ₂ O	205		
	Zn ²⁺	2.08	Cal			25	H ₂ O	205		
Phos17C7-2	H ⁺	4.43	Pot			25	Diox·H ₂ O (7:3/v:v)	208		
	Chart XX									
PhosB ₂ 17C7-1	Li ⁺	3.18	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 491		
	Na ⁺	4.50	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 491		
	K ⁺	3.94	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 491		
	Mg ²⁺	3.56	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	263, 491		
	Ca ²⁺	4.17	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491		

TABLE 1 (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
PhosB ₂ 17C7-2	Li ⁺	2.41	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Na ⁺	3.92	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	K ⁺	3.36	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Mg ²⁺	3.37	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Ca ²⁺	3.79	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
PhosB ₂ 17C7-3	Li ⁺	2.38	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v) (anion = picrate)	491, 492
	Na ⁺	3.49	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	K ⁺	2.89	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	Mg ²⁺	2.78	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	Ca ²⁺	3.75	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
PhosB ₂ 17C7-4	Li ⁺	3.12	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Na ⁺	3.65	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	K ⁺	3.02	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Mg ²⁺	3.44	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v) (anion = picrate)	491
	Ca ²⁺	3.99	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v) (anion = picrate)	491
PhosB ₂ 17C7-5	Li ⁺	3.86	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	Na ⁺	4.65	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	K ⁺	3.69	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	Mg ²⁺	3.62	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
	Ca ²⁺	4.69	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491, 492
PhosB ₂ 17C7-6	Li ⁺	2.18	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Na ⁺	3.20	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	K ⁺	1.97	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Mg ²⁺	2.36	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Ca ²⁺	3.02	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
PhosB ₂ 17C7-7	Li ⁺	2.21	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Na ²⁺	3.73	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	K ⁺	2.35	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Mg ²⁺	2.78	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
	Ca ²⁺	3.44	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v), (anion = picrate)	491
Spher-18C-1	Li ⁺	>16.70	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493
	Li ⁺	>16.85	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494
	Na ⁺	10.00	Solv Extr-UV (Pic Anal)			25	H ₂ O (anion = picrate)	494
	Na ⁺	14.15	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493
	Na ⁺	14.08	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494
Spher-18C-2	Li ⁺	9.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	494
	Na ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	K ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	Na ⁺	9.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	Na ⁺	9.88	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	494
Spher-18C-3	Li ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	Na ⁺	6.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	K ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
Spher-18C-4	Li ⁺	7.63	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	495
	Na ⁺	4.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	495

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Spher-18C-5	H ⁺	13.0	Spec			25	Diox·H ₂ O (8:2/v:v), in presence of 1,5-diazabi- cyclo[4.3.0]non-5-ene	494a
	H ⁺	12.7	Spec			25	Diox·H ₂ O (8:2/v:v), in presence of K ₂ CO ₃	494a
	H ⁺	12.8	Spec			25	Diox·H ₂ O (8:2/v:v), in presence of CaCl ₂	494a
	H ⁺	13.2	Spec			25	Diox·H ₂ O (8:2/v:v), in presence of MgCl ₂	494a
	Li ⁺	5.9	Spec			25	Diox·H ₂ O (8:2/v:v), (Li + HL = LiL + H ⁺)	494a
	Na ⁺	6.9	Spec			25	Diox·H ₂ O (8:2/v:v), (Na ⁺ + HL = NaL + H ⁺)	494a
Spher-Quinone18C-1	Li ⁺	9.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	Na ⁺	7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
	K ⁺	4.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494a
Calix4-18C1-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.30,4.23	Spec			25?	MeCN	448
	<i>t</i> -C ₄ H ₉ CH ₂ NH ₃ ⁺	3.38,4.15	Spec			25?	MeCN	448
Spher-18C2-1	Li ⁺	5.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	9.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	7.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	6.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	6.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	4.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	4.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-18C2-2	Na ⁺	9.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	7.67	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	6.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	6.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	4.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	5.59	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	9.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Spher-18C2-3	K ⁺	7.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	6.00	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	5.51	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	6.11	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	CH ₃ NH ₃ ⁺	5.97	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.57	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	6.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	5.62	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Spher-18C2-4	Rb ⁺	5.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	4.88	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	2.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	5.69	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
Spher-18C2-5	K ⁺	4.82	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	3.94	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	3.94	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	4.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	CH ₃ NH ₃ ⁺	3.89	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Spher-18C2-6	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.86	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Li ⁺	nm	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	3.79	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	3.38	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	2.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	2.85	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	3.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
Spher-B18C2-1	CH ₃ NH ₃ ⁺	2.85	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Li ⁺	5.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	9.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	6.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-B18C2-2	NH ₄ ⁺	6.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	4.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	9.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	8.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	7.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	6.53	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-B18C2-3	NH ₄ ⁺	7.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	5.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	7.58	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	6.57	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	5.74	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	5.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	5.68	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Spher-B18C2-4	CH ₃ NH ₃ ⁺	4.58	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	7.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	5.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	4.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	4.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	3.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Chart XXI								
(Nap) ₄ 18C2-1	Li ⁺	3.72	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	3.61	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	3.70	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Rb ⁺	3.75	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	3.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	3.42	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
Spher-T ₂ 18C2-1 (Chart XX)	Li ⁺	2.96	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	3.08	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
Spher-18C3-1	K ⁺	3.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Rb ⁺	3.26	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Cs ⁺	2.90	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	NH ₄ ⁺	2.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	CH ₃ NH ₃ ⁺	2.18	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.00	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Li ⁺	5.15	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 500	
	Li ⁺	5.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Li ⁺	5.25	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Na ⁺	9.04	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 500	
	Na ⁺	8.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Na ⁺	9.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	K ⁺	9.04	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 500	
	K ⁺	8.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	K ⁺	9.06	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Rb ⁺	7.66	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 500	
	Rb ⁺	7.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Rb ⁺	7.66	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Spher-18C3-2	Cs ⁺	6.49	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 500
		Cs ⁺	6.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	269, 501, 502
NH ₄ ⁺		7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
NH ₄ ⁺		7.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
CH ₃ NH ₃ ⁺		6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	269, 501, 502	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		5.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	269, 501, 502	
Li ⁺		5.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
Na ⁺		8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
K ⁺		8.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
Rb ⁺		6.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
Spher-18C3-3	Cs ⁺	5.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	NH ₄ ⁺	6.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	CH ₃ NH ₃ ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Li ⁺	4.78	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Na ⁺	5.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	K ⁺	5.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Rb ⁺	4.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	Cs ⁺	4.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
	NH ₄ ⁺	4.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501, 502	
Spher-18C3-4	CH ₃ NH ₃ ⁺	4.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	CH ₃ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501	
	<i>t</i> -C ₄ H ₉ NH ₄ ⁺	2.97	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501	
	Li ⁺	5.08	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503	
	Na ⁺	8.96	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
Spher-18C3-5	K ⁺	8.57	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Rb ⁺	7.70	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Cs ⁺	6.62	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Li ⁺	5.04	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Na ⁺	9.04	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
Spher-18C3-6	K ⁺	8.90	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Rb ⁺	7.53	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Cs ⁺	6.59	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Li ⁺	5.11	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Na ⁺	9.04	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
Spher-18C3-7	K ⁺	8.90	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Rb ⁺	7.81	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Cs ⁺	6.65	Solv Extr-UV (Pic Anal)			22	D ₂ O, sat'd CDCl ₃ (anion = picrate)	503
	Li ⁺	5.20	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Na ⁺	7.86	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
Spher-18C3-8	K ⁺	7.43	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Rb ⁺	6.40	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Cs ⁺	5.84	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Li ⁺	8.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	11.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-18C3-9	K ⁺	9.43	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	7.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	6.73	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	7.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	6.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	5.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	9.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	7.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-18C3-10	Cs ⁺	5.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	5.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	4.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	7.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	6.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	5.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-18C3-11	CH ₃ NH ₃ ⁺	5.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	5.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	6.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Spher-18C3-12	K ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	5.78	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	5.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	4.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	7.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	6.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	5.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-18C3-13	NH ₄ ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	5.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	5.53	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	4.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-18C3-14	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	4.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	6.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	4.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	4.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Li ⁺	5.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
Spher-Py18C3-1	Na ⁺	8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	K ⁺	7.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Rb ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Cs ⁺	5.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	NH ₄ ⁺	6.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	CH ₃ NH ₃ ⁺	5.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	~4.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	Na ⁺	~4.6	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	K ⁺	~3.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
K ₂ 18C3-diene-1	Rb ⁺	~3.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	NH ₄ ⁺	~3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	CH ₃ NH ₃ ⁺	~5.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~3.9	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
K ₃ 18C3-diene-1 (Chart XXII)	Li ⁺	~4.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	Na ⁺	~4.6	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	K ⁺	~3.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	Rb ⁺	~4.0	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	NH ₄ ⁺	~4.0	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	CH ₃ NH ₃ ⁺	~5.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~3.2	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
Spher-A ₂ 18C3-1	NH ₄ ⁺	14.81	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Li ⁺	<4.94	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Na ⁺	8.49	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	K ⁺	<8.68	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	<7.06	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Cs ⁺	<5.24	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
Spher-Py18C4-1	Li ⁺	5.43	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Li ⁺	5.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	8.30	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Na ⁺	7.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	8.08	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	K ⁺	7.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	7.40	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Rb ⁺	7.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	7.04	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Cs ⁺	7.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	7.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	8.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	8.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
Spher-Py18C4-2	Li ⁺	5.56	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Na ⁺	8.26	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	K ⁺	8.08	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Rb ⁺	7.58	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Cs ⁺	7.04	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
Spher-Py18C4-3	Li ⁺	5.63	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Na ⁺	8.70	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	K ⁺	8.20	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Rb ⁺	7.59	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
	Cs ⁺	7.20	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499
Spher-Py18C4-4	Li ⁺	4.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	8.92	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	8.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	7.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	6.43	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	6.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	6.63	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
Chart XXII								
(1,3-B) ₂ 18C4-1	Li ⁺	4.76	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	6.39	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	7.20	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	6.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	5.71	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	5.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	CH ₃ NH ₃ ⁺	5.18	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.53	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
(1,3-B) ₂ 18C4-2	Li ⁺	2.93	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	3.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	3.59	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	3.38	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	3.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	3.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	(Nap) ₂ 18C4-1	Li ⁺	3.34	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)
	Na ⁺	3.90	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	4.60	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	4.40	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	3.77	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
(Nap) ₂ 18C4-2	Li ⁺	4.20	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	6.08	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	6.57	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	5.75	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	5.90	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
Spher-Pyrano18C4-1	Li ⁺	5.28	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Na ⁺	7.00	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	K ⁺	6.84	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Rb ⁺	5.96	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Cs ⁺	9.87	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
Spher-Pyrano18C4-2	Li ⁺	5.30	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Na ⁺	7.63	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	K ⁺	7.41	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Rb ⁺	6.70	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
	Cs ⁺	6.38	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	500
Spher-Fur18C4-1	Li ⁺	<4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Na ⁺	6.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	K ⁺	6.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Rb ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	Cs ⁺	5.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	NH ₄ ⁺	5.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
	CH ₃ NH ₃ ⁺	4.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	501	
K ₄ (1,3-B) ₂ A ₂ 18C4-1	Li ⁺	2.7	Cond			25	MeCN	505

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
$K_4(3,5\text{-Py})_2A_218C4-1$ $K_4(3,5\text{-Py})_2A_218C4-2$ $A_418C4-1$	K^+	nm	Cond			25	MeCN	505	
	Mg^{2+}	1.9	Cond			25	MeCN	505	
	Mg^{2+}	2.5	Cond			25	MeCN	505	
	H^+	11.06(1)	Pot			25	H_2O , 0.5 M KNO_3	279	
	H^+	10.13(2)	Pot			25	H_2O , 0.5 M KNO_3	279	
	H^+	8.92(3)	Pot			25	H_2O , 0.5 M KNO_3	279	
	H^+	7.95(4)	Pot			25	H_2O , 0.5 M KNO_3	279	
	H^+	11.44(1)	Pot			20	H_2O , 0.1 M KNO_3	220,221,456	
	H^+	10.51(2)	Pot			20	H_2O , 0.1 M KNO_3	220,221,456	
	H^+	7.27(3)	Pot			20	H_2O , 0.1 M KNO_3	220,221,456	
	H^+	6.90(4)	Pot			20	H_2O , 0.1 M KNO_3	220,221,456	
	Cu^{2+}	16.38	Pot			25	H_2O , 0.5 M KNO_3	279	
	Cu^{2+}	10.53							
		(CuHL)	Pot			25	H_2O , 0.5 M KNO_3	279	
	Ag^+	8.0(1+2)	Pot			20	H_2O , 0.1 M KNO_3	220	
	Ag^+	16.6	Pot			20	H_2O , 0.1 M KNO_3		
		(Ag_2L_3)							
		NH_4^+	3.02(1)	Pot				H_2O , pH > 8	220
		NH_4^+	2.42(2)	Pot				H_2O , pH > 8	220
	$A_418C4-2$	NH_4^+	3.12(1)	NMR				H_2O	220
NH_4^+		2.54(2)	NMR				H_2O	220	
H^+		10.8(1)	NMR			25?	20% D_2O ?	265	
H^+		10.5(2)	NMR			25?	20% D_2O ?	265	
H^+		7.0(3)	NMR			25?	20% D_2O ?	265	
H^+		6.8(4)	NMR			25?	20% D_2O ?	265	
Spher- $A_418C4-1$ (Chart XXIV)		Li^+	11.79	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506
	Na^+	11.15	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	K^+	8.49	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	Rb^+	7.98	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	Cs^+	7.76	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	NH_4^+	8.04	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	$CH_3NH_3^+$	7.76	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	$t\text{-}C_4H_9NH_3^+$	9.08	Solv Extr-UV (Pic Anal)			25	D_2O sat'd $CDCl_3$ (anion = picrate)	506	
	18C5-1	$t\text{-}C_4H_9NH_3^+$	4.26	Solv Extr-NMR (SCN ⁻ Anal)			0	$CDCl_3$ (anion = SCN ⁻)	388
		$t\text{-}C_4H_9NH_3^+$	3.22	Solv Extr-NMR (SCN ⁻ Anal)			24	$CDCl_3$ (anion = SCN ⁻)	388
18C5-2	Li^+	~4.3	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	Na^+	~4.0	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	K^+	~4.2	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	Rb^+	~3.5	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	NH_4^+	~4.8	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	$CH_3NH_3^+$	~3.4	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
	$t\text{-}C_4H_9NH_3^+$	~2.3	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	478	
K18C5-1	Li^+	4.52	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	Na^+	4.82	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	K^+	6.32	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	Rb^+	5.75	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	NH_4^+	5.92	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	$CH_3NH_3^+$	4.43	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
	$t\text{-}C_4H_9NH_3^+$	3.48	Solv Extr-UV (Pic Anal)			25	$CDCl_3$ (anion = picrate)	87	
(1,3-B)18C5-1	Li^+	2.00	Solv Extr-UV (Pic Anal)			24	$CDCl_3$ (anion = picrate)	507	
	Na^+	1.81	ISE			25	H_2O (anion = Cl ⁻)	508	
	Na^+	3.23	Solv Extr-UV (Pic Anal)			24	$CDCl_3$ (anion = picrate)	507	
	K^+	2.82	ISE			25	H_2O (anion = Cl ⁻)	508	
	K^+	5.04	Solv Extr-UV (Pic Anal)			24	$CDCl_3$ (anion = picrate)	507	
	K^+	6.23	Sol-NMR			27	$CDCl_3$ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb^+	5.32	Sol-NMR			27	$CDCl_3$ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb^+	4.82	Solv Extr-UV (Pic Anal)			24	$CDCl_3$ (anion = picrate)	507	
	Cs^+	5.38	Sol-NMR			27	$CDCl_3$ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	

Chart XXIII

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Cs ⁺	4.71	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	NH ₄ ⁺	5.06	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.34	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371,509
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.00	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.52	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272, 507
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.33	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.54	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.81	NMR	-8.4	8.4	33.5	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.92	NMR			18	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.02	NMR			3	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.10	NMR			-12.5	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.21	NMR			-33	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.71	NMR	-14.2	-12.6	33.5	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.89	NMR			18	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.07	NMR			3	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.23	NMR			-12.5	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.38	NMR			-33	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	0.58	NMR	-16.7	-43.9	33.5	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	0.76	NMR			18	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	0.93	NMR			3	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.09	NMR			-12.5	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.36	NMR			-33	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	510
	<i>t</i> -C ₄ H ₉ SC(NH ₂) ₂ ⁺	2.27	NMR			36	CDCl ₃ (anion = ClO ₄ ⁻)	511
(1,3-B)18C5-2	H ⁺	10.6	Spec			20	H ₂ O	266
	Na ⁺	2.25	Cal	-22.2	-133.4	25	MeOH	267
	Na ⁺	2.23	ISE			25	MeOH	267
	K ⁺	3.18	Cal	-33.5	-214.8	25	MeOH	267
	K ⁺	3.15	ISE			25	MeOH	267
(1,3-B)18C5-3	Cs ⁺	2.62	Cal	-33.5	-259.7	25	MeOH	267
	H ⁺	4.8	Pot			22	H ₂ O	270, 271, 512
	H ⁺	5.71	Pot			25	H ₂ O	123, 271
	H ⁺	7.76	Pot			25	MeOH·H ₂ O (8:2/w/w)	468
	H ⁺	10.32	Pot			25	MeOH·H ₂ O (99:1/w/w)	469
	Na ⁺	4.11	Cal			25	MeOH·H ₂ O (8:2/w/w)	469
	Na ⁺	2.68	(NaHL)			25	MeOH·H ₂ O (8:2/w/w)	469
	Na ⁺	5.0	Cal	-4.6	35.4	25	MeOH·H ₂ O (99:1/w/w)	469
	Na ⁺	2.22	(NaHL)			25	MeOH·H ₂ O (99:1/w/w)	469
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.09	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.58	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
(1,3-B)18C5-4	Na ⁺	2.55	Cal	-18.4	-13.6	25	MeOH·H ₂ O (8:2/w/w)	469
	Na ⁺	2.80	Cal			25	MeOH·H ₂ O (99:1/w/w)	469
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.75	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.23	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
(1,3-B)18C5-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.36	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.85	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
(1,3-B)18C5-6	Na ⁺	2.30	Cal	-15.9	-39.3	25	MeOH	267
	Na ⁺	2.28	ISE			25	MeOH	267
	K ⁺	3.52	Cal	-24.7	-64.6	25	MeOH	267
	K ⁺	3.48	ISE			25	MeOH	267
(1,3-B)18C5-7	Cs ⁺	2.76	Cal	-22.8	-98.3	25	MeOH	267
	H ⁺	6.6	Spec			20	H ₂ O	266
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.40	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.88	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
(1,3-B)18C5-8	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.06	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.54	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
(1,3-B)18C5-9	Li ⁺	3.00	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	Na ⁺	3.20	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	K ⁺	4.06	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	Rb ⁺	3.74	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	Cs ⁺	3.52	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
	NH ₄ ⁺	4.03	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
(1,3-B)18C5-10	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.82	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507	
	Li ⁺	2.40	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Na ⁺	3.20	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	K ⁺	5.04	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Rb ⁺	4.85	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Cs ⁺	4.71	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	NH ₄ ⁺	5.08	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
(1,3-B)18C5-11	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.72	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	507	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.56	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.66	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Li ⁺	2.60	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Na ⁺	3.41	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	K ⁺	5.12	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Rb ⁺	4.89	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	Cs ⁺	4.75	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	NH ₄ ⁺	5.09	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.51	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	507	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.36	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507	
(1,3-B)18C5-12	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.79	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	507	
(1,3-B)18C5-13	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.81	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507	
(1,3-B)18C5-14	Na ⁺	2.51	ISE			25	H ₂ O (anion = Cl ⁻)	508	
(1,3-B)18C5-15	K ⁺	3.56	ISE			25	H ₂ O (anion = Cl ⁻)	508	
	Li ⁺	4.00	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
(1,3-B)18C5-16	Na ⁺	4.67	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	K ⁺	6.26	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Cs ⁺	5.06	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	NH ₄ ⁺	5.57	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Na ⁺	2.39	ISE			25	H ₂ O (anion = Cl ⁻)	508	
(1,3-B)18C5-17	K ⁺	3.18	ISE			25	H ₂ O (anion = Cl ⁻)	508	
	H ⁺	6.6	Spec			20	H ₂ O	266	
	H ⁺	6.78	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	La ³⁺	3.06	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Nd ³⁺	3.27	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Eu ³⁺	3.17	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Gd ³⁺	3.03	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Dy ³⁺	3.05	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Er ³⁺	2.79	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	Lu ³⁺	2.74	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	268	
	(1,3-B)18C5-18	Li ⁺	2.00	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507
Na ⁺		3.04	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
K ⁺		4.56	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
Rb ⁺		4.28	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
Cs ⁺		4.14	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
NH ₄ ⁺		4.50	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.52	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	507	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		4.37	Solv Extr-NMR (ClO ₄ ⁻ Anal)			24	CDCl ₃ (anion = ClO ₄ ⁻)	507	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.88	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	507	
(1,3-B)18C5-19		H ⁺	6.69	Spec			25	Diox·H ₂ O (1:9/v/v), I = 0.09-0.24	274, 275
		H ⁺	7.0	Spec			25	Diox·H ₂ O (1:9)	88
(1,3-B)18C5-20	Na ⁺	3.3	Spec			-10	<i>i</i> -PrOH	513	
	Na ⁺	3.5	Spec			-20	<i>i</i> -PrOH	513	
	K ⁺	6.0	Spec			-30	<i>i</i> -PrOH	513	
K ₂ (1,3-B)18C5-1	Na ⁺	nm	Cal			25	MeOH, 0.005 M	514	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref	
Spher-A ₄ T18C5-1	NH ₄ ⁺	10.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	CH ₃ NH ₃ ⁺	>10.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	>10.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	Li ⁺	11.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	Na ⁺	13.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	K ⁺	10.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	Rb ⁺	9.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	Cs ⁺	8.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	NH ₄ ⁺	9.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	CH ₃ NH ₃ ⁺	9.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
A ₅ 18C5-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	10.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506	
	H ⁺	10.15(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	9.52(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	8.55(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	<2(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	Co ²⁺	11.54	Pot			35	H ₂ O, 0.2 M NaClO ₄	196	
	H ⁺	11.2(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
	H ⁺	10.3(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
	H ⁺	9.6(3)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
(1,3-B)A ₅ 18C5-1	H ⁺	4.8(4)	Pot/Spec			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
	H ⁺	<2(5)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
	H ⁺	<1(6)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	461	
	Mg ²⁺	3.1	Spec			25	EtOH	460, 461	
	Ca ²⁺	2.9	Spec			25	EtOH	460, 461	
	Sr ²⁺	2.6	Spec			25	EtOH	460, 461	
	Ba ²⁺	2.4	Spec			25	EtOH	460, 461	
	Chart XXV								
	18C6-1	H ⁺	1.46	IEM			25	H ₂ O	517
		H ⁺	-0.80	Mac Dist-UV (Pic Anal)			15	H ₂ O, 0.5 M HCl	290
H ⁺		-0.62	Mac Dist-UV (Pic Anal)			20	H ₂ O, 0.5 M HCl	290	
H ⁺		-0.40	Mac Dist-UV (Pic Anal)	62.3	201	25	H ₂ O, 0.5 M HCl	290	
H ⁺		-0.38	Mac Dist-UV (Pic Anal)			25	H ₂ O, 1.0 M HCl	290	
H ⁺		-0.40	Mac Dist-UV (Pic Anal)			25	H ₂ O, 2.0 M HCl	290	
H ⁺		-0.25	Mac Dist-UV (Pic Anal)			30	H ₂ O, 0.5 M HCl	290	
H ⁺		>5	Cal	-29.0	26.5	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
H ₃ O ⁺			Spec	-370.3	-233.5	?	Gas-phase ion-molecule equilibria	43	
H ₃ O ⁺		-0.30	IEM			?	MeOH-H ₂ O (25:75/v:v)	518	
H ₃ O ⁺		1.82	IEM			?	MeOH-H ₂ O (50:50/v:v)	518	
Li ⁺		5.63	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87	
Li ⁺ , AsF ₆ ⁻		2.21	Kin			25	1,3-Dioxolane	291	
Li ⁺ , AsF ₆ ⁻		1.03	Kin			25	DME	97	
Li ⁺		0.59	NMR			40?	1 mol% LiCl in 45 mol% AlCl ₃ melt	41	
Li ⁺		<0.5	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519	
Li ⁺		2.70	Cal	-17.0	-5.71	25	PC	293	
Li ⁺		3.72	Spec			30	THF (anion = picrate)	451	
Na ⁺		2.01	NMR			30	DOH (anion = I ⁻)	294	
Na ⁺		0.82	IEM			25	H ₂ O (anion = Cl ⁻)	94	
Na ⁺		0.52	ITP			25?	H ₂ O, pH 8.5	520, 521	
Na ⁺		0.63	Mac Dist-UV (Pic Anal)			25	H ₂ O, I = 0.5 (anion = Cl ⁻)	522	
Na ⁺		1.09	ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295	
Na ⁺		1.28	ISE			25?	H ₂ O, 0.01 M OH ⁻	523	
Na ⁺		0.78	ISE			25?	H ₂ O, 0.1 M OH ⁻	523	
Na ⁺		0.28	ISE			25?	H ₂ O, 0.5 M OH ⁻	523	
Na ⁺		-0.30	ISE			25?	H ₂ O, 1.0 M OH ⁻	523	
Na ⁺		1.44	ISE			25?	H ₂ O, 0.01 M SCN ⁻	523	
Na ⁺		1.01	ISE			25?	H ₂ O, 0.1 M SCN ⁻	523	
Na ⁺		0.99	ISE			25?	H ₂ O, 0.5 M SCN ⁻	523	
Na ⁺	0.99	ISE			25?	H ₂ O, 1.0 M SCN ⁻	523		
Na ⁺	1.38	ISE			25?	H ₂ O, 0.01 M Cl ⁻	523		
Na ⁺	0.90	ISE			25?	H ₂ O, 0.1 M Cl ⁻	523		
Na ⁺	0.68	ISE			25?	H ₂ O, 0.5 M Cl ⁻	523		
Na ⁺	0.40	ISE			25?	H ₂ O, 1.0 M Cl ⁻	523		
Na ⁺	0.69	NMR			25?	H ₂ O, 0.01 M OH ⁻	523		
Na ⁺	0.54	NMR			25?	H ₂ O, 0.1 M OH ⁻	523		
Na ⁺	0.64	NMR			25?	H ₂ O, 0.5 M OH ⁻	523		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	0.93	NMR			25?	H ₂ O, 1.0 M OH ⁻	523
	Na ⁺	0.75	NMR			25?	H ₂ O, 0.01 M SCN ⁻	523
	Na ⁺	0.63	NMR			25?	H ₂ O, 0.1 M SCN ⁻	523
	Na ⁺	0.74	NMR			25?	H ₂ O, 0.5 M SCN ⁻	523
	Na ⁺	1.23	NMR			25?	H ₂ O, 1.0 M SCN ⁻	523
	Na ⁺	0.72	NMR			27	H ₂ O	524
	Na ⁺	-0.15	Ebulliometry			boiling	0.6 molal <i>t</i> -BuOK· <i>t</i> -BuOH	103
	Na ⁺	6.11	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	Na ⁺	1.19	Cal	-10.4	-12.1	25	Diox·H ₂ O (20:80/w:w)	205, 525
	Na ⁺	1.48	Cal	-11.2	-9.1	25	Diox·H ₂ O (35:65/w:w)	205, 525
	Na ⁺	1.78	Cal	-11.9	-5.7	25	Diox·H ₂ O (50:50/w:w)	205, 525
	Na ⁺	2.16	Cal	-17.2	-16.1	25	Diox·H ₂ O (70:30/w:w)	205, 525
	Na ⁺	2.10	NMR			22	DMF (anion = BPh ₄ ⁻)	526
	Na ⁺	2.4	Cond			25	DMF	527
	Na ⁺	2.6	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296
	Na ⁺	2.6	Polg			25?	DMF, 0.05 M Et ₄ NI	296
	Na ⁺	2.5	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296
	Na ⁺	2.3	Polg			25?	DMF, 0.05 M Bu ₄ NI	296
	Na ⁺	2.28	Pot			25	DMF	528
	Na ⁺		Kin	5.86		40	DMF [step 2+3: Na ⁺ ...L = (NaL) ⁺] ^e	529
	Na ⁺	3.20	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Na ⁺	4.13	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	Na ⁺	<-0.70	Ebulliometry			boiling	0.6 molal EtOK·EtOH	103
	Na ⁺	2.32	Spec			25	Glycerol (anion = Cl ⁻)	530, 531
	Na ⁺	<-0.70	Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103
	Na ⁺	4.21	NMR			22	MeCN (anion = BPh ₄ ⁻)	526, 532
	Na ⁺	4.39	NMR	-32.9	25.1	25	MeCN	299
	Na ⁺	4.71	ISE	-2.3(Cal)	97.7	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Na ⁺	4.6	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296
	Na ⁺	4.2	Polg			25?	MeCN, 0.05 M Et ₄ NI	296
	Na ⁺	4.4	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296
	Na ⁺	4.5	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296
	Na ⁺	4.57	NMR			22	Me ₂ CO	532
	Na ⁺ ,Br	2.34	NMR	-20.9	-20.9	25	MeNH ₂	301
	Na ⁺	0.49(1)	NMR			30?	MeOD (anion = acetate)	533
	Na ⁺	1.22(2)	NMR			30?	MeOD (anion = acetate)	533
	Na ⁺	2.81	NMR			30?	MeOD (anion = acetate) (2Na ⁺ + 2L)	533
	Na ⁺	3.51	ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534
	Na ⁺	1.15	IEM			?	MeOH·H ₂ O (25:75/v:v)	518
	Na ⁺	2.37	IEM			?	MeOH·H ₂ O (50:50/v:v)	518
	Na ⁺	3.46	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Na ⁺	3.64	ISE			25	MeOH·H ₂ O (9:1/v:v) (anion = ClO ₄ ⁻)	304
	Na ⁺	4.38	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Na ⁺	3.92	Pot			10	MeOH, 0.1 M Et ₄ NCl	535
	Na ⁺	4.32	Cal	-34.0	-32	25	MeOH	305
	Na ⁺		Cal	-31.4	-21.8	25	MeOH	104
	Na ⁺	4.42	Cond			25	MeOH	101
	Na ⁺	4.46	Cond			25	MeOH	358
	Na ⁺	4.30	Cond	-38.9	-48.5	25	MeOH (anion = ClO ₄ ⁻)	536
	Na ⁺	4.32	Fluor			25	MeOH (anion = Cl ⁻)	537
	Na ⁺	4.30	ISE			25	MeOH	311,348,538
	Na ⁺	4.32	ISE			25	MeOH	376
	Na ⁺	4.32	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	Na ⁺	4.65	ISE			25	MeOH, 0.1 M Et ₄ NI	359
	Na ⁺	4.34	ISE	-30.96	-21.06	25	MeOH (anhydrous)	309,310,539
	Na ⁺	4.5	ISE			25?	MeOH, 0.01 M OH ⁻	523
	Na ⁺	3.9	ISE			25?	MeOH, 0.1 M OH ⁻	523
	Na ⁺	2.5	ISE			25?	MeOH, 0.5 M OH ⁻	523
	Na ⁺	2.1	ISE			25?	MeOH, 1.0 M OH ⁻	523
	Na ⁺	4.8	ISE			25?	MeOH, 0.01 M SCN ⁻	523
	Na ⁺	5.0	ISE			25?	MeOH, 0.1 M SCN ⁻	523
	Na ⁺	5.3	ISE			25?	MeOH, 0.5 M SCN ⁻	523
	Na ⁺	5.5	ISE			25?	MeOH, 1.0 M SCN ⁻	523
	Na ⁺	4.17	ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Na ⁺		Kin	26.8		25	MeOH [step 2: Na ⁺ ...L = Na ⁺ L] ^e	529
	Na ⁺		Kin	-27.6		25	MeOH [step 3: Na ⁺ L = (NaL) ⁺] ^e	529
	Na ⁺	4.32	NMR			25	MeOH (anion = SCN ⁻)	541
	Na ⁺	4.43	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Na ⁺	4.34	Pot			25	MeOH	542
	Na ⁺	4.34	Pot			25	MeOH, <i>I</i> -> 0	543
	Na ⁺	4.30	Pot			25	MeOH	312
	Na ⁺	4.35	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Na ⁺	4.33	Pot			25	MeOH, 0.005 M Bu ₄ NOH	543
	Na ⁺	4.32	Pot			25	MeOH, 0.01 M Bu ₄ NOH	543
	Na ⁺	4.30	Pot			25	MeOH, 0.03 M Bu ₄ NOH	543
	Na ⁺	4.29	Pot			25	MeOH, 0.05 M Bu ₄ NOH	543
	Na ⁺	4.27	Pot			25	MeOH, 0.08 M Bu ₄ NOH	543
	Na ⁺	4.28	Pot			25	MeOH, 0.1 M Bu ₄ NOH	543
	Na ⁺	4.22	Pot			25	MeOH, 0.2 M Bu ₄ NOH	543

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	4.17	Pot			25	MeOH, 0.3 M Bu ₄ NOH	543
	Na ⁺	4.13	Pot			25	MeOH, 0.4 M Bu ₄ NOH	543
	Na ⁺	4.09	Pot			25	MeOH, 0.5 M Bu ₄ NOH	543
	Na ⁺	-0.30	Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	Na ⁺	6.95	Solv Extr· CyVolt			?	NBnz	
	Na ⁺	5.16	NMR			22	PC	544
	Na ⁺	4.55	ISE	-28.7(Cal)	-9.4	25	PC, 0.05 M Et ₄ NClO ₄	532
	Na ⁺	5.60	Pot			25	PC, 0.1 Et ₄ NClO ₄	293
	Na ⁺	<-0.70	Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	545
	Na ⁺	-0.30	Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	Na ⁺	1.82	NMR			30	Py/Py- <i>d</i> ₆ (1:1), 0.07-0.17 M NaClO ₄	
	Na ⁺		Cal	-36.2		25	Py	363
	Na ⁺	4.29	Spec			30	THF (anion = picrate)	314
	K ⁺	1.89	Cal	-29.89	-64.06	25	H ₂ O (anion = ClO ₄ ⁻)	451
	K ⁺	1.83	Cal	-30.83	-68.39	25	H ₂ O (anion = BrO ₃ ⁻)	546
	K ⁺	1.97	Cal	-26.02	-49.57	25	H ₂ O (anion = Cl ⁻)	546
	K ⁺	1.98	Cal	-19.64	-27.97	25	H ₂ O (anion = Br ⁻)	546
	K ⁺	1.94	Cal	-23.72	-42.43	25	H ₂ O (anion = I ⁻)	546
	K ⁺	2.23	Cal	-19.03	-20.76	25	H ₂ O (anion = NO ₃ ⁻)	546
	K ⁺	2.00	Cal	-26.53	-50.71	25	H ₂ O (anion = CO ₃ ²⁻)	546
	K ⁺	2.27	Cal	-16.15	-10.70	25	H ₂ O (anion = S ₂ O ₈ ²⁻)	546
	K ⁺		Cal	-23.4	-37.6	25	H ₂ O	104
	K ⁺	2.288	Cond			10	H ₂ O (anion = Cl ⁻)	547
	K ⁺	2.253	Cond			15	H ₂ O (anion = Cl ⁻)	547
	K ⁺	2.135	Cond			20	H ₂ O (anion = Cl ⁻)	547
	K ⁺	2.034	Cond			25	H ₂ O (anion = Cl ⁻)	547
	K ⁺	1.940	Cond			35	H ₂ O (anion = Cl ⁻)	547
	K ⁺	1.790	Cond			45	H ₂ O (anion = Cl ⁻)	547
	K ⁺	2.11	Cond			25	H ₂ O, <i>I</i> ~ 0 (anion = Cl ⁻)	548
	K ⁺	2.12,2.10	Cond			25	H ₂ O (anion = Cl ⁻)	100
	K ⁺	2.03	IEM			25	H ₂ O	549
	K ⁺	2.05	IEM			25	H ₂ O (anion = Cl ⁻)	94
	K ⁺	2.11	IEM			?	H ₂ O, pH 2	550
	K ⁺	2.06	IEM			?	H ₂ O, pH 7-12	550
	K ⁺	2.06	ITP			25?	H ₂ O, pH 8.5	520, 521
	K ⁺	2.32	Polg			20	H ₂ O, 0.1 M Me ₄ NOH	367
	K ⁺	2.1	Polg			25	H ₂ O, 0.1 M Me ₄ NOH	367
	K ⁺	2.16	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, L competes with [2.2.2]·1 H ₂ O, 0.1 M (anion = Cl ⁻)	422
	K ⁺	2.08	Mac Dist·UV (Pic Anal)			25		522
	K ⁺	5.24	Solv Extr·UV			25?	Acetophenone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	3.40	Solv Extr·UV			25?	Adiponitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	1.97	Solv Extr·UV			25?	<i>t</i> -Amyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	4.07	Solv Extr·UV			25?	Benzyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	>2.78	Ebulliometry			boiling	0.6 molal <i>t</i> -BuOK· <i>t</i> -BuOH	103
	K ⁺	3.58	Solv Extr·UV			25?	Cyclohexanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	4.21	Solv Extr·UV			25?	Cyclohexanone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	>11.00	Solv Extr·UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	K ⁺	2.39	Solv Extr·UV			25?	1,4-Dioxaspiro[4,5]decane (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	4.01	Pot			25	DMF	528
	K ⁺		Kin	18.8		25	DMF (anion = ClO ₄ ⁻)	
	K ⁺		Kin	-22.6		25	[step 2: K ⁺ ...L = K ⁺ L] ⁺ DMF (anion = ClO ₄ ⁻)	552
	K ⁺		Kin			25	[step 3: K ⁺ L = (KL) ⁺] ⁺ DMF	552
	K ⁺	4.31	Cond			25	DMF	527
	K ⁺	4.4	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296
	K ⁺	4.5	Polg			25?	DMF, 0.05 M Et ₄ NI	296
	K ⁺	4.6	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296
	K ⁺	4.5	Polg			25?	DMF, 0.05 M Bu ₄ NI	296
	K ⁺	4.59	Cond			35	DMF (anion = 4-NO ₂ PhO ⁻)	553
	K ⁺		Kin	18.8		40	DMF [step 2: K ⁺ ...L = K ⁺ L] ⁺	529
	K ⁺		Kin	-22.6		40	DMF [step 3: K ⁺ L = (KL) ⁺] ⁺	529
	K ⁺	4.80	Pot			25	EtOH·H ₂ O (9:1/v:v) 0.1 M Bu ₄ NClO ₄	354
	K ⁺	6.05	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	K ⁺	<-0.70	Ebulliometry			boiling	0.6 molal EtOK·EtOH	103
	K ⁺	4.65	Spec			25	Glycerol (anion = Cl ⁻)	530, 531
	K ⁺	5.42	Solv Extr·UV			25?	Isobutyronitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	<-0.70	Ebulliometry			boiling	0.6 molal KOH·H ₂ O	103
	K ⁺	6.8	Cond			25?	20.16 vol% MeCN + C ₆ H ₅ Cl (anion = SCN ⁻)	554
	K ⁺	5.46	NMR			22	MeCN	532
	K ⁺	6.0	Cond			25	MeCN	505
	K ⁺	4.49	Cond			25?	MeCN (anion = SCN ⁻)	554

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	5.72	ISE	-9.9(Cal)	75.8	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	K ⁺	5.4	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296
	K ⁺	5.2	Polg			25?	MeCN, 0.05 M Et ₄ NI	296
	K ⁺	5.9	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296
	K ⁺	6.3	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296
	K ⁺	6.00	NMR			22	Me ₂ CO	532
	K ⁺	0.91(1)	NMR			30?	MeOD (anion = acetate)	533
	K ⁺	1.19(2)	NMR			30?	MeOD (anion = acetate)	533
	K ⁺	5.23	ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534
	K ⁺	2.33	IEM			?	MeOH·H ₂ O (25:75/v:v)	518
	K ⁺	3.38	IEM			?	MeOH·H ₂ O (50:50/v:v)	518
	K ⁺	5.50	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	5.44	ISE			25	MeOH·H ₂ O (9:1v/v), (anion = ClO ₄ ⁻)	304
	K ⁺	6.20	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	6.32	Cond	-54.5	-67.0	25	MeOH (anion = ClO ₄ ⁻)	536
	K ⁺	6.18	Cs-133NMR			22	MeOH (anion = Cl ⁻)	526
	K ⁺	>5	Cal	-54.9	-68	25	MeOH	305
	K ⁺	6.29	Cal	-56.5		25	MeOH (K ⁺ competes with Na ⁺)	369
	K ⁺	6.07	Cal	-56.8		25	MeOH (K ⁺ competes with Cs ⁺)	369
	K ⁺		Cal	-53.1	-60.4	25	MeOH	104
	K ⁺	>5.5	Cond			25	MeOH	101
	K ⁺	6.20	Cond			25	MeOH	358
	K ⁺	6.3	Cond			25	MeOH	505
	K ⁺	6.15	Fluor			25	MeOH (anion = Cl ⁻)	537
	K ⁺	6.09	ISE			25	MeOH	376
	K ⁺	6.02	ISE			25	MeOH	348, 538
	K ⁺	6.15	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄ or Et ₄ NNO ₃	101
	K ⁺	6.09	ISE	-47.28	-42.54	25	MeOH (anhydrous)	309,310,539
	K ⁺	6.0	ISE			25	MeOH	311
	K ⁺	6.02	Pot			25	MeOH	312
	K ⁺	6.08	Pot			25	MeOH	542
	K ⁺	4.83	Cond			35	MeOH (anion = 4-NO ₂ PhO ⁻)	553
	K ⁺	4.34	Cond			35	MeOH (anion = PhO ⁻)	553
	K ⁺	3.36	Cond			35	MeOH (anion = 4-MePhO ⁻)	553
	K ⁺	3.26	Cond			35	MeOH (anion = 4-OMePhO ⁻)	553
	K ⁺	6.05	Cond			25?	9.95 vol% Me ₂ SO + C ₆ H ₅ Cl (anion = SCN ⁻)	554
	K ⁺	-0.15	Ebulliometry			boiling	0.6 molal MeOK·MeOH	103
	K ⁺	3.9	Cond			25?	Me ₂ SO (anion = SCN ⁻)	554
	K ⁺	4.34	Cond			35	Me ₂ SO (anion = 4-NO ₂ PhO ⁻)	553
	K ⁺	3.2	NMR			25	Me ₂ SO- <i>d</i> ₆ (anion = CF ₃ SO ₃ ⁻)	555
	K ⁺	3.4	NMR			25	Me ₂ SO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	556
	K ⁺	7.02	Cond			25?	10.11 vol% PC + C ₆ H ₅ Cl (anion = SCN ⁻)	554
	K ⁺	7.39	Solv Extr. CyVolt			?	NBnz	544
	K ⁺	6.14	NMR			22	PC	532
	K ⁺	6.08	ISE	-45.4(Cal)	-36.6	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	4.98	Cond			25?	PC (anion = SCN ⁻)	554
	K ⁺	3.76	Solv Extr-UV			25?	Phenylacetoneitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	4.12	Solv Extr-UV			25?	2-Phenylethanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	7.3	Polg			20	<i>i</i> -PrOH·MeOH (3:1), 0.1 M Me ₄ NOH	367
	K ⁺	5.23	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (9:1), 0.1 M Me ₄ NOH	367
	K ⁺	4.38	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (8:2), 0.1 M Me ₄ NOH	367
	K ⁺	4.02	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (7:3), 0.1 M Me ₄ NOH	367
	K ⁺	3.48	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (6:4), 0.1 M Me ₄ NOH	367
	K ⁺	3.04	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (5:5), 0.1 M Me ₄ NOH	367
	K ⁺	2.79	Polg			20	[<i>i</i> -PrOH·MeOH (3:1)]·H ₂ O (3:7), 0.1 M Me ₄ NOH	367
	K ⁺	3.74	Kin			25	<i>i</i> -PrOH	557
	K ⁺	<-0.70	Ebulliometry			boiling	0.6 molal <i>n</i> -PrOK· <i>n</i> -PrOH	103
	K ⁺	0.45	Ebulliometry			boiling	0.6 molal <i>i</i> -PrOK· <i>i</i> -PrOH	103
	K ⁺	3.17	Solv Extr-UV			25?	2-(Tetrahydrofurfuryloxy) tetrahydropyran (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	5.33	Spec			30	THF (anion = picrate)	451
	Rb ⁺	1.55	Cond			25	H ₂ O, <i>I</i> ~ 0 (anion = Cl ⁻)	548
	Rb ⁺	10.57	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
	Rb ⁺	3.98	Cond			25	DMF	527
	Rb ⁺	3.75	Pot			25	DMF	528
	Rb ⁺	3.27	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Rb ⁺	3.79	Spec			25	Glycerol (anion = Cl ⁻)	531
	Rb ⁺	5.18	NMR			22	Me ₂ CO	532
	Rb ⁺	5.24	Cal	-12.6	57.4	25	MeCN	298
	Rb ⁺	4.89	Pot			25	MeCN	528

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Rb ⁺	5.30	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	>5	Cal	-49.6	-64	25	MeOH	305
	Rb ⁺	5.82	Cal	-47.1		25	MeOH	369
	Rb ⁺	5.35	Cond			25	MeOH	101
	Rb ⁺	5.73	Cond			25	MeOH	358
	Rb ⁺	5.47	Polg			25	MeOH, 0.1 M Me ₄ NI	367
	Rb ⁺	5.43	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Rb ⁺	5.35	Pot			25	MeOH	542
	Rb ⁺	3.16	Pot			25	Me ₂ SO	528
	Rb ⁺	6.44	Solv Extr. CyVolt			?	NBnz	
	Rb ⁺	5.22	NMR			22	PC	544
	Rb ⁺	5.33	Pot	-44.2 (Cal)	-46.6	25	PC, 0.05 M Et ₄ NClO ₄	532
	Cs ⁺	0.89	NMR			20	D ₂ O	293
	Cs ⁺	0.79	Cond			25	H ₂ O, $I \sim 0$ (anion = Cl ⁻)	398
	Cs ⁺	0.98	IEM			25	H ₂ O (anion = Cl ⁻)	548
	Cs ⁺	2.7(1)	NMR			25	DMAC	94
	Cs ⁺	0.40(2)	NMR			25	DMAC	318
	Cs ⁺	4.03	Na-23NMR			22	DMF (anion = BPh ₄ ⁻)	526
	Cs ⁺	4.50	NMR			22	DMF (anion = NO ₃ ⁻)	526
	Cs ⁺	3.67	Cond			25	DMF	527
	Cs ⁺	>4(1)	NMR			25	DMF	318
	Cs ⁺	0.37(2)	NMR			25	DMF	318
	Cs ⁺	3.3(1)	NMR			25	Form	318
	Cs ⁺	-0.4(2)	NMR			25	Form	318
	Cs ⁺	2.63	Spec			25	Glycerol (anion = Cl ⁻)	530, 531
	Cs ⁺	4.83	Na-23NMR			22	MeCN (anion = BPh ₄ ⁻)	526
	Cs ⁺	4.83	NMR			22	MeCN	532
	Cs ⁺	5.07	Cal	-15.6	39.6	25	MeCN	298
	Cs ⁺	4.62	NMR			22	Me ₂ CO	532
	Cs ⁺	4.55	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	3.49	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Cs ⁺	4.44(1)	Cal	-49.9	-83	25	MeOH	305
	Cs ⁺	4.14(2)	Cal	-6.3	58	25	MeOH	305
	Cs ⁺	4.37	Cond			25	MeOH	101
	Cs ⁺	4.49	Cond			25	MeOH	358
	Cs ⁺	4.70	Pot			25	MeOH	542
	Cs ⁺	2.9(1)	NMR			25	NMF	318
	Cs ⁺	0.04(2)	NMR			25	NMF	318
	Cs ⁺	4.45	NMR			22	PC	532
	Cs ⁺	4.48	Cal	-42.9	-58.4	25	PC	293
	Cs ⁺	0.65	Spec			25	PEG 200 (anion = Cl ⁻)	530
	Cs ⁺	4.91	Spec			30	THF (anion = picrate)	451
	Mg ²⁺	2.33	Na-23NMR			22	DMF (anion = NO ₃ ⁻)	526
	Mg ²⁺	2.50	Spec			25	DMF	368
	Mg ²⁺	2.26	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Mg ²⁺	3.61	Spec			25	MeOH	368
	Mg ²⁺	2.22	Spec			25	Me ₂ SO	368
	Ca ²⁺	0.70	NMR			30	DOH (anion = Cl ⁻)	294
	Ca ²⁺	0.53	Cal	-9.55	-21.9	25	H ₂ O (anion = Cl ⁻)	558
	Ca ²⁺	0.67	NMR			25	H ₂ O (anion = Cl ⁻)	558
	Ca ²⁺	1.26	Cal	-2.91	14.4	25	H ₂ O (anion = NO ₃ ⁻)	558
	Ca ²⁺	0.48	IEM			25	H ₂ O (anion = Cl ⁻)	94
	Ca ²⁺	1.10	NMR			25	H ₂ O (anion = NO ₃ ⁻)	558
	Ca ²⁺	3.03	Spec			25	DMF	368
	Ca ²⁺	<1.30	Na-23NMR			22	DMF (anion = NO ₃ ⁻)	526
	Ca ²⁺	3.16	Pot			25	EtOH·H ₂ O (9:1/v:v)	
	Ca ²⁺	4.13	Cal	-35.48	-39.9	25	0.1 M Bu ₄ NClO ₄	354
	Ca ²⁺	5.09	Cal	-21.44	-25.6	25	EtOH (anion = Cl ⁻)	559
	Ca ²⁺		Cal	-35.48		25	EtOH (anion = NO ₃ ⁻)	559
	Ca ²⁺		Cal	-21.44		25	EtOH (anion = Cl ⁻)	560
	Ca ²⁺		Cal	-21.44		25	EtOH (anion = NO ₃ ⁻)	560
	Ca ²⁺	3.87	Cal	-11.2	36	25	MeOH	305
	Ca ²⁺	3.96(1)	Cond			25	MeOH	319
	Ca ²⁺	2.04(2)	Cond			25	MeOH	319
	Ca ²⁺	4.40	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	3.94	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Ca ²⁺	4.25	Spec			25	MeOH	368
	Ca ²⁺	2.49	Spec			25	Me ₂ SO	368
	Sr ²⁺	3.0,	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 1/1), L competes with A ₂ 18C6-4	422
	Sr ²⁺	2.88					H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 2/1), L competes with A ₂ 18C6-4	422
	Sr ²⁺	2.1	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 1/2), L competes with A ₂ 18C6-4	422
	Sr ²⁺	2.85	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 1/2), L competes with A ₂ 18C6-4	422
	Sr ²⁺	2.76	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 1/3), L competes with A ₂ 18C6-4	422
	Sr ²⁺	2.89	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Sr ²⁺]/[L] = 1/5), L competes with A ₂ 18C6-4	422

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Sr ²⁺	2.84	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, L competes with A ₂ 18C6-1	422
	Sr ²⁺	2.86	Cond			25	H ₂ O, I ~ 0 (anion = Cl ⁻)	548
	Sr ²⁺	2.75	Cond			25?	H ₂ O	561
	Sr ²⁺	2.89	Mac Dist-AA (Sr ²⁺ Anal)			25?	H ₂ O (anion = NO ₃ ⁻ + picrate)	562
	Sr ²⁺	2.40	Radpolg			25	H ₂ O, 0.1 M Et ₄ NI, pH 3	563
	Sr ²⁺	3.00	Na-23NMR			22	DMF (anion = NO ₃ ⁻)	526
	Sr ²⁺	4.23	Spec			25	DMF	368
	Sr ²⁺	4.76	Cond			25?	EtOH + 10 mol/L H ₂ O	561
	Sr ²⁺	>5(1)	Cal	.37.2		25	MeOH	305
	Sr ²⁺	5.39	Cal	.37.2	.7	25	MeOH	412
	Sr ²⁺	6.84	Cal	.31.4		25	MeOH	369
	Sr ²⁺	5.64	Cond			25	MeOH (absolute)	564
	Sr ²⁺	6.5	Polg			25	extrapolated to 100% MeOH	519
	Sr ²⁺	5.64	Spec			25	MeOH	368
	Sr ²⁺	3.63	Spec			25	Me ₂ SO	368
	Ba ²⁺	3.96	Cal	-32.84		15	H ₂ O	565
	Ba ²⁺	3.77	Cal	-31.42		25	H ₂ O	565
	Ba ²⁺	3.56	Cal	-30.14		37	H ₂ O	565
	Ba ²⁺	4.5	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Ba ²⁺]/[L] = 1/1), L competes with A ₂ 18C6-4	422
	Ba ²⁺	4.3	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, ([Ba ²⁺]/[L] = 2/1), L competes with A ₂ 18C6-4	422
	Ba ²⁺	3.83	Pot			20	H ₂ O, 0.1 M Me ₄ NBr, L competes with A ₂ 18C6-4	422
	Ba ²⁺	4.15	Cond			25	H ₂ O, I ~ 0 (anion = Cl ⁻)	548
	Ba ²⁺	3.7	NMR			25	H ₂ O	566
	Ba ²⁺	3.68	Mac Dist-AA (Ba ²⁺ Anal)			25?	H ₂ O (anion = NO ₃ ⁻ + picrate)	562
	Ba ²⁺	3.67	Radiopolg			25	H ₂ O, 0.1 M LiCl, pH 3	563
	Ba ²⁺	4.21	Na-23NMR			22	DMF (anion = NO ₃ ⁻)	526
	Ba ²⁺		Kin	15.9		25	DMF [step 2: Ba ²⁺ ·L = Ba ²⁺ L] ^e	567
	Ba ²⁺		Kin	-8.24		25	DMF [step 3: Ba ²⁺ L = (BaL) ²⁺ L] ^e	567
	Ba ²⁺	5.29	Spec			25	DMF	368
	Ba ²⁺	8.88	NMR			22	MeCN	532
	Ba ²⁺	>5	Cal	.19.8	103.0	25	MeCN	298
	Ba ²⁺	8.54	NMR			22	Me ₂ CO	532
	Ba ²⁺	>5	Cal	.48.5	76	25	MeOH	305
	Ba ²⁺	7.38	Cal	.48.5	.21.8	25	MeOH, (anion = ClO ₄ ⁻)	412, 414
	Ba ²⁺	7.31	Cal	.47.4		25	MeOH (Ba ²⁺ competes with Na ⁺)	369
	Ba ⁺	7.38	Cal	.48.4		25	MeOH (Ba ²⁺ competes with Ag ⁺)	369
	Ba ²⁺	7.31	Cal	.48.5	.23.5	25	MeOH	109
	Ba ²⁺	7.3	Ext			25	100% MeOH	519
	Ba ²⁺	7.15	Spec			25	MeOH	368
	Ba ²⁺	4.68	Spec			25	Me ₂ SO	368
	Ba ²⁺	>9	NMR			22	PC	532
	La ³⁺	<1.23	Na-23NMR			22	DMF (anion = NO ₃ ⁻), EtOH (anion = NO ₃ ⁻)	526
	La ³⁺	4.62	Cond			24.6	EtOH (anion = SCN ⁻)	349
	La ³⁺	4.97	Cond			24.6	EtOH (anion = Cl ⁻)	349
	La ³⁺	5.39	Cond			24.6	EtOH (anion = Cl ⁻)	349
	La ³⁺	5.71	Cond			24.6	EtOH (anion = ClO ₄ ⁻)	349
	La ³⁺	2.8	Cal	11.7	92.5	25	MeCN (anion = Cl ⁻)	321
	La ³⁺	4.77	Cond			24.6	MeCN (anion = NO ₃ ⁻)	349
	La ³⁺	5.41	Cond			24.6	MeCN (anion = Cl ⁻)	349
	La ³⁺	13.0	Cal	.39.71	115.7	25	MeCN (anion = NO ₃ ⁻)	568
	La ³⁺	4.4	NMR			25	MeCN	569
	La ³⁺	>6	NMR			25?	MeCN (anion = CF ₃ COO ⁻)	110, 570
	La ³⁺	4.1	NMR			25	MeCN·d ₃ , (anion = NO ₃ ⁻)	571
	La ³⁺	3.35	Calc'd			25?	MeOH + 7-9 mols H ₂ O per 1 mol La ³⁺	111
	La ³⁺	3.33	Pot			10	MeOH, 0.1 M Et ₄ NCl	535
	La ³⁺	3.25	Cond			24.6	MeOH (anion = NO ₃ ⁻)	349
	La ³⁺	3.63	Cond			24.6	MeOH (anion = SCN ⁻)	349
	La ³⁺	3.74	Cond			24.6	MeOH (anion = Cl ⁻)	349
	La ³⁺	4.30	Cond			24.6	MeOH (anion = ClO ₄ ⁻)	349
	La ³⁺	4.08	Fluor			25	MeOH (anion = Cl ⁻)	537
	La ³⁺	3.54	Na ⁺ ISE			25	MeOH, 0.1 M Et ₄ NI	359
	La ³⁺	3.71	Spec			25	MeOH, I = 0.025 (Et ₄ NClO ₄ + 2x10 ⁻⁴ M HClO ₄)	572
	La ³⁺	3.53	Spec			25	MeOH, I = 0.025 (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	La ³⁺	3.25	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	La ³⁺	3.2	NMR			27	MeOH	573
	La ³⁺	3.36	IEM			30	MeOH, 0.1 M Me ₄ NCl	574
	La ³⁺	4.32	Spec			25	PC, 0.1 M Et ₄ NClO ₄	115
	Ce ³⁺	4.43	Cond			24.6	EtOH (anion = NO ₃ ⁻)	349
	Ce ³⁺	4.74	Cond			24.6	EtOH (anion = SCN ⁻)	349
	Ce ³⁺	5.28	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Ce ³⁺	5.49	Cond			24.6	EtOH (anion = ClO ₄ ⁻)	349
	Ce ³⁺	4.5	Cal	.42.7	61.9	25	MeCN (anion = NO ₃ ⁻)	321
	Ce ³⁺	3.62	Cond			24.6	MeCN (anion = NO ₃ ⁻)	349
	Ce ³⁺	4.39	Cond			24.6	MeCN (anion = Cl ⁻)	349
	Ce ³⁺	4.5	NMR			25	MeCN·d ₃ (anion = NO ₃ ⁻)	571
	Ce ³⁺	3.08	Cond			24.6	MeOH (anion = NO ₃ ⁻)	349
	Ce ³⁺	3.31	Cond			24.6	MeOH (anion = NCS ⁻)	349

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ce ³⁺	3.73	Cond			24.6	MeOH (anion = Cl ⁻)	349
	Ce ³⁺	4.01	Cond			24.6	MeOH (anion = ClO ₄ ⁻)	349
	Ce ³⁺	4.21	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 2x10 ⁻⁴ M HClO ₄)	572
	Ce ³⁺	4.06	Spec			25	MeOH, $I = 0.25$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Ce ³⁺	2.81	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Pr ³⁺ ,3Fod ⁻	1.35	NMR			25?	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	575
	Pr ³⁺	5.02	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Pr ³⁺	3.7	NMR			25	MeCN	569
	Pr ³⁺	3.7	NMR			25	MeCN-d ₃ (anion = NO ₃ ⁻)	571
	Pr ³⁺	4.22	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Pr ³⁺	2.47	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Pr ³⁺	5.90	Spec			25	PC, 0.1 M Et ₄ NClO ₄	115
	Nd ³⁺ ,3PTA ⁻	0.70	NMR			25?	CD ₂ Cl ₂ (PTA = pivaloytri-fluoroacetate)	576
	Nd ³⁺	4.85	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Nd ³⁺	3.5	NMR			25	MeCN	569
	Nd ³⁺	3.5	NMR			25	MeCN-d ₃ (anion = NO ₃ ⁻)	571
	Nd ³⁺	4.28	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Nd ³⁺	2.16	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Sm ³⁺	4.60	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Sm ³⁺	4.4	NMR			25?	MeCN (anion = CF ₃ COO ⁻)	110, 570
	Sm ³⁺	<1.6	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Sm ³⁺	8.23	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Sm ³⁺	7.19	Spec			25	PC, 0.1 M Et ₄ NClO ₄	115
	Eu ²⁺	2.53	Cond			25?	H ₂ O	561
	Eu ²⁺	2.7	Radpolg			25	H ₂ O	577
	Eu ²⁺	4.72	Cond			25?	EtOH + 10 mol/L H ₂ O	561
	Eu ²⁺	9.00	Polg			25	Me ₂ CO, 0.1 M Et ₄ NClO ₄	578
	Eu ³⁺ ,3Fod ⁻	5.30(1)	Spec			20	CCl ₄ (Fod = heptafluoro-dimethyloctanedionate)	579, 580
	Eu ³⁺ , ₃ Fod ⁻	none(2)	Spec			20	CCl ₄ (Fod = heptafluoro-dimethyloctanedionate)	579, 580
	Eu ³⁺ ,3Fod ⁻	3.00	Spec			20	CCl ₄ (Fod = heptafluoro-dimethyloctanedionate)	579, 580
	Eu(Fod) ₃ ,2L							
	Eu ³⁺ ,3Fod ⁻	1.28	NMR			27	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	581
	Eu ³⁺ ,3Fod ⁻	1.32(1)	NMR			28	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	582
	Eu ³⁺ ,3Fod ⁻	0.60(2)	NMR			28	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	582
	Eu ³⁺ ,3Fod ⁻	1.93	NMR			30	CDCl ₃ (Fod = heptafluoro-dimethyloctanedionate)	113
	Eu ³⁺	4.34	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Eu ³⁺	2.6	NMR			25	MeCN	569
	Eu ³⁺	2.6	NMR			25	MeCN-d ₃ (anion = NO ₃ ⁻)	571
	Eu ³⁺	6.40	Polg			25	Me ₂ CO, 0.1 M Et ₄ NClO ₄	578
	Eu ³⁺	4.30	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Eu ³⁺	<1.5	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Eu ³⁺	8.07	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Eu ³⁺	8.5	Pot			25	PC, 0.1 M Et ₄ NClO ₄ (anion = CF ₃ SO ₃ ⁻)	326
	Gd ³⁺	4.02	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Gd ³⁺	1.33	Calc'd			25?	MeOH + 7.9 mols H ₂ O per 1 mol Gd ³⁺	111
	Gd ³⁺	<1.5	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Tb ²⁺	2.4	Radpolg			25	H ₂ O	577
	Tb ³⁺	3.86	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Tb ³⁺	4.58	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 8x10 ⁻⁴ M HClO ₄)	572
	Tb ³⁺	<1.2	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Tb ³⁺	7.98	Spec			25	PC, 0.1 M Et ₄ NClO ₄	115
	Tb ³⁺	7.99	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Dy ³⁺	3.68	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Dy ³⁺	4.21	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Dy ³⁺	<1.2	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Ho ³⁺	3.52	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Ho ³⁺	<1.5	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Er ³⁺ ,3PTA ⁻	0.85	NMR			25?	CD ₂ Cl ₂ (PTA = pivaloytri-fluoroacetate)	576
	Er ³⁺	3.48	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Er ³⁺	<1.4	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Er ³⁺	8.86	Spec			25	PC, 0.1 M Et ₄ NClO ₄	115
	Tm ³⁺	3.40	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Tm ³⁺	<1.3	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Yb ²⁺	2.4	Radpolg			25	H ₂ O	577
	Yb ³⁺	3.33	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Yb ³⁺	2.3	NMR			25	MeCN	569
	Yb ³⁺	2.3	NMR			25	MeCN-d ₃ (anion = NO ₃ ⁻)	571
	Yb ³⁺	4.73	Spec			25	MeOH, $I = 0.025$ (Et ₄ NClO ₄ + 4x10 ⁻⁴ M HClO ₄)	572
	Lu ³⁺	3.19	Cond			24.6	EtOH (anion = Cl ⁻)	349

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Lu ³⁺	0	Calc ^d			25?	MeOH + 7.9 mols H ₂ O per 1 mol Lu ³⁺	111
	Lu ³⁺	7.20	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Mn ²⁺	none	Spec			25?	H ₂ O	116
	Co ²⁺ , 2TTA ^e	3.61	Solv Extr- Rad			25?	CHCl ₃ (TTA = thenoyltri- fluoroacetate)	118
	Co ²⁺	2.48	NMR			25?	Me ₂ CO (anion = Cl ⁻)	583
	Co ²⁺	0.79(Co ₂ L)	NMR			25?	Me ₂ CO (anion = Cl ⁻)	583
	Co ²⁺	3.41	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Co ²⁺	3.95	Pot	-47.8(Cal)	-85.2	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ni ²⁺	1.85	Cs-133NMR			22	DMF (anion = NO ₃ ⁻)	526
	Ni ²⁺	2.47	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ni ²⁺	2.51	Cond			25	MeOH	319
	Cu ²⁺	2.68(1)	Cond			25	MeOH	319
	Cu ²⁺	1.17(2)	Cond			25	MeOH	319
	Cu ²⁺	2.47	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Cu ²⁺	6.35	Pot	-51.0(Cal)	-50.0	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	1.24	Cond			25	H ₂ O, I ~ 0 (anion = Cl ⁻)	548
	Ag ⁺	-1.0	Kin			25	DMF (anion = ClO ₄ ⁻)	
	Ag ⁺	3.58	Pot			25	[step 2: Ag ⁺ ...L = Ag ⁺ L] ^e EtOH·H ₂ O (9:1/v/v), 0.1 M Bu ₄ NClO ₄	552
	Ag ⁺	nm	Cal/Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	354
	Ag ⁺	0.93	Pot			25	MeCN	298
	Ag ⁺	5.57	Pot			25	Me ₂ CO	528
	Ag ⁺	4.58	Cal	-39.1	-44	25	MeOH	528
	Ag ⁺	4.60	Cond	-40.9	-57.5	25	MeOH (anion = ClO ₄ ⁻)	305
	Ag ⁺	4.65	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	536
	Ag ⁺	6.86	Pot			25	PC, 0.1 M Et ₄ NClO ₄	305
	Zn ²⁺	2.22	Polg			25	MeOH, 0.1 M Et ₄ NI	114, 115
	Cd ²⁺	2	d.c.Polg			25	H ₂ O, 0.1 M HNO ₃	319
	Hg ²⁺	4.0	Polg			25	H ₂ O, 0.1 M HNO ₃	119
	In ³⁺	2.43	d.c. Polg			25	MeCN, 0.1 M Et ₄ NClO ₄	231
	In ³⁺	2.50	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	Tl ⁺	2.98	d.c.Polg			25	H ₂ O, 0.1 M HNO ₃	328
	Tl ⁺	3.06	a.c.Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Tl ⁺	2.3	Polg			25	H ₂ O, 0.1 M Me ₄ NOH	329
	Tl ⁺	2.27	NMR			28	H ₂ O	367
	Tl ⁺	2.11	NMR	-18.8	-22.4	25.1	H ₂ O	584
	Tl ⁺	2.02	NMR			35.2	H ₂ O	585
	Tl ⁺	1.93	NMR			45.3	H ₂ O	585
	Tl ⁺	1.81	NMR			55.2	H ₂ O	585
	Tl ⁺	1.74	NMR			65.2	H ₂ O	585
	Tl ⁺	1.64	NMR			75.7	H ₂ O	585
	Tl ⁺	3.42	Polg			23	DMF	586
	Tl ⁺	1.26	Kin			25	DMF (anion = ClO ₄ ⁻)	
	Tl ⁺	3.73	NMR	-36.2	52.1	25	[step 2: Tl ⁺ ...L = Tl ⁺ L] ^e DMF	552
	Tl ⁺	3.35	NMR			28	DMF	299
	Tl ⁺	1.35	NMR			25	HMPA	584
	Tl ⁺	5.81	NMR			22	MeCN	587
	Tl ⁺	>5	NMR			28	MeCN	532
	Tl ⁺	6.18(1)	NMR			22	Me ₂ CO	584
	Tl ⁺	<0.70(2)	NMR			22	Me ₂ CO	532
	Tl ⁺	>5	NMR			25	Me ₂ CO	587
	Tl ⁺	>5	NMR			28	Me ₂ CO	584
	Tl ⁺	5.10	Cond	-42.9	-46.5	25	MeOH (anion = ClO ₄ ⁻)	536
	Tl ⁺	5.55	Polg			23	MeOH	586
	Tl ⁺	5.34	Cal	-45.65	-50.7	25	MeOH	331
	Tl ⁺	5.22	Cal	-50.9	-71.1	25	MeOH	109
	Tl ⁺	5.04	Fluor			25	MeOH (anion = ClO ₄ ⁻)	537
	Tl ⁺	1.92	NMR			28	Me ₂ SO	584
	Tl ⁺	>5	NMR			28	NMe	584
	Tl ⁺	4.23	NMR			25	Sulfolane	587
	Pb ²⁺	3.58	ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	Pb ²⁺	4.21	d.c.Polg			25	H ₂ O, 0.1 HNO ₃	119, 370
	Pb ²⁺	4.25	a.c.Polg			25	H ₂ O, 0.1 HNO ₃	119, 370
	Pb ²⁺	3.66	Na-23NMR			22	DMF (anion = NO ₃ ⁻)	526
	Pb ²⁺	7.9	Polg			25	MeOH·C ₆ H ₆ (8:2/v/v), 0.025 M Bu ₄ NClO ₄	519
	Pb ²⁺	>5	Cal	45		25	MeOH	332
	Pb ²⁺	>5.5	Cal	-37.5		25	MeOH	331
	Pb ²⁺	6.99	ISE	-45.0(Cal)	-17.8	25	MeOH, 0.05 M Et ₄ NClO ₄	109
	Pb ²⁺	7.52	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Pb ²⁺	7.26(Pb ₂ L)	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Pb ²⁺	7.7	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	332
	Cf ²⁺	2.0	Radpolg			25	H ₂ O	577
	Ra ²⁺	3.43	Radpolg			25	H ₂ O, 0.1 M LiCl, pH 3	563
	UO ₂ ²⁺	2.1(1)	Na ⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295
	UO ₂ ²⁺	3.9(2)	Na ⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 3	295
	UO ₂ ²⁺	2.0(1)	Pb ²⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	UO ₂ ²⁺	3.7(2)	Pb ²⁺ ISE			25	H ₂ O, 0.1 M Et ₄ NClO ₄ , pH 2	295
	UO ₂ ²⁺	3.15	Pot			25	EtOH·H ₂ O (9:1/v/v), 0.1 M Bu ₄ NClO ₄	354
	UO ₂ ²⁺	3.80	Spec			25	MeCN, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	5.31	Pot			25	PC, 0.1 M Et ₄ NClO ₄	545
	UO ₂ ²⁺	5.29	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333, 334
	UO ₂ ²⁺	5.9	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
NH ₄ ⁺		0.93	Cond			25	H ₂ O, $I \sim 0$ (anion = Cl ⁻)	548
NH ₄ ⁺		1.06	ITP			25?	H ₂ O, pH 8.5	520, 521
NH ₄ ⁺		0.97	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = Cl ⁻)	522
NH ₄ ⁺		1.22	Pot			25	H ₂ O	588
NH ₄ ⁺		1.20	NMR			27	H ₂ O	524
NH ₄ ⁺		9.38	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
NH ₄ ⁺			Kin	-0.84		25	DMF (anion = ClO ₄) [step 2: NH ₄ ⁺ ...L = NH ₄ ⁺ L] ^e	552
NH ₄ ⁺			Kin	-14.2		25	DMF (anion = ClO ₄) [step 3: NH ₄ ⁺ L = (NH ₄ L) ⁺] ^e	552
NH ₄ ⁺		4.10	Cond	-39.2	-52.8	25	MeOH (anion = ClO ₄)	536
CH ₃ OH ₂ ⁺			Spec	-282.8	-209.2	?	gas-phase ion-molecule equilibria	43
CH ₃ NH ₃ ⁺		0.4	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = ClO ₄)	522
CH ₃ NH ₃ ⁺		1.13	Pot			25	H ₂ O	588
CH ₃ NH ₃ ⁺		7.51	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
CH ₃ NH ₃ ⁺		3.32	Na ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534
C ₂ H ₅ NH ₃ ⁺		0.15	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = ClO ₄)	522
C ₂ H ₅ NH ₃ ⁺		3.20	Na ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534
C ₂ H ₅ NH ₃ ⁺		0.99	Pot			25	H ₂ O	588
(C ₂ H ₅) ₂ NH ₃ ⁺		0.87	Pot			25	H ₂ O	588
(C ₂ H ₅) ₃ NH ⁺		0.74	Pot			25	H ₂ O	588
<i>n</i> -C ₃ H ₇ NH ₃ ⁺		0.1	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = ClO ₄)	522
<i>i</i> -C ₃ H ₇ NH ₃ ⁺		-0.1	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = ClO ₄)	522
<i>n</i> -C ₄ H ₉ NH ₃ ⁺		-0.05	Mac Dist-UV (Pic Anal)			25	H ₂ O, $I = 0.5$ (anion = ClO ₄)	522
<i>n</i> -C ₄ H ₉ NH ₃ ⁺		0.94	Pot			25	H ₂ O	588
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		7.52	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		6.48	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		7.36	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		6.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	87
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.47	NMR	-3.7	44.8	33.5	MeCN (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.67	NMR			-12.5	MeCN- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.63	NMR			3	MeCN- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.54	NMR			18	MeCN- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		4.32	NMR			-12.5	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		4.15	NMR			3	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.90	NMR			18	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		3.65	NMR	-22.6	-2.9	33.5	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.98	NMR			-12.5	MeOD- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.79	NMR			3	MeOD- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.57	NMR			18	MeOD- <i>d</i> ₃ (anion = ClO ₄)	510
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		2.41	NMR	-19.3	-16.3	33.5	MeOD- <i>d</i> ₃ (anion = ClO ₄)	510
4-CH ₃ PhNH ₃ ⁺		none	Spec			25	DCE	589
Ph(CH ₂) ₂ NH ₃ ⁺		3.18	Na ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534
4-CH ₃ OPhNH ₃ ⁺		none	Spec			25	DCE	589
2-NO ₂ PhNH ₃ ⁺		none	Spec			25	DCE	589
3-NO ₂ PhNH ₃ ⁺		<0	Spec			25	DCE	589
4-NO ₂ PhNH ₃ ⁺		0.72	Spec			25	DCE	589
1-NapNH ₃ ⁺		2.55	Fluor			7	MeOH·H ₂ O (9:1/v/v)	590
1-NapNH ₃ ⁺		2.47	Fluor			17	MeOH·H ₂ O (9:1/v/v)	590
1-NapNH ₃ ⁺		2.33	Fluor	-9.62	-12.6	27	MeOH·H ₂ O (9:1/v/v)	590
1-NapNH ₃ ⁺		2.15	Fluor			44	MeOH·H ₂ O (9:1/v/v)	590
2-NapNH ₃ ⁺		3.50	Fluor			7	MeOH·H ₂ O (9:1/v/v)	590
2-NapNH ₃ ⁺		3.39	Fluor			17	MeOH·H ₂ O (9:1/v/v)	590
2-NapNH ₃ ⁺		3.21	Fluor	-28.9	-37.7	27	MeOH·H ₂ O (9:1/v/v)	590
2-NapNH ₃ ⁺		2.91	Fluor			44	MeOH·H ₂ O (9:1/v/v)	590
1-PhenNH ₃ ⁺		2.64	Fluor			7	MeOH·H ₂ O (9:1/v/v)	591
1-PhenNH ₃ ⁺		2.51	Fluor			17	MeOH·H ₂ O (9:1/v/v)	591
1-PhenNH ₃ ⁺		2.36	Fluor	-22.6	-30.5	27	MeOH·H ₂ O (9:1/v/v)	591
1-PhenNH ₃ ⁺		2.20	Fluor			37	MeOH·H ₂ O (9:1/v/v)	591
1-PhenNH ₃ ⁺		2.11	Fluor			47	MeOH·H ₂ O (9:1/v/v)	591
2-PhenNH ₃ ⁺		2.34	Fluor			7	MeOH·H ₂ O (9:1/v/v)	591
2-PhenNH ₃ ⁺		2.22	Fluor			17	MeOH·H ₂ O (9:1/v/v)	591
2-PhenNH ₃ ⁺		2.03	Fluor	-31.8	-44.4	27	MeOH·H ₂ O (9:1/v/v)	591
2-PhenNH ₃ ⁺		2.85	Fluor			37	MeOH·H ₂ O (9:1/v/v)	591
2-PhenNH ₃ ⁺		2.69	Fluor			47	MeOH·H ₂ O (9:1/v/v)	591
3-PhenNH ₃ ⁺		2.26	Fluor			17	MeOH·H ₂ O (9:1/v/v)	591
3-PhenNH ₃ ⁺		2.12	Fluor	-29.7	-39.7	27	MeOH·H ₂ O (9:1/v/v)	591
3-PhenNH ₃ ⁺		2.94	Fluor			37	MeOH·H ₂ O (9:1/v/v)	591
3-PhenNH ₃ ⁺		2.80	Fluor			47	MeOH·H ₂ O (9:1/v/v)	591
4-PhenNH ₃ ⁺		1.49	Fluor			7	MeOH·H ₂ O (9:1/v/v)	591
4-PhenNH ₃ ⁺		1.40	Fluor			17	MeOH·H ₂ O (9:1/v/v)	591
4-PhenNH ₃ ⁺		1.32	Fluor	-15.9	-28.9	27	MeOH·H ₂ O (9:1/v/v)	591
4-PhenNH ₃ ⁺		1.26	Fluor			37	MeOH·H ₂ O (9:1/v/v)	591
4-PhenNH ₃ ⁺		1.19	Fluor			47	MeOH·H ₂ O (9:1/v/v)	591
9-PhenNH ₃ ⁺		2.46	Fluor			7	MeOH·H ₂ O (9:1/v/v)	591
9-PhenNH ₃ ⁺		2.36	Fluor			17	MeOH·H ₂ O (9:1/v/v)	591
9-PhenNH ₃ ⁺		2.22	Fluor	-22.2	-31.8	27	MeOH·H ₂ O (9:1/v/v)	591

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	9-PhenNH ₃ ⁺	2.10	Fluor			37	MeOH·H ₂ O (9:1/v:v)	591
	9-PhenNH ₃ ⁺	1.96	Fluor			47	MeOH·H ₂ O (9:1/v:v)	591
	4-CH ₃ PhN ₂ ⁺	1.9	NMR			25?	MeCN-d ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	4-(t-C ₄ H ₉)PhN ₂ ⁺	2.84	Spec			25	DCE (anion = BF ₄ ⁻)	593
	4-CNPhN ₂ ⁺	5.21	Spec			50	DCE (anion = BF ₄ ⁻)	594
	4-CO ₂ HPhN ₂ ⁺	1.8	NMR			25?	MeCN-d ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	4-NO ₂ PhN ₂ ⁺	2.0	NMR			25?	MeCN-d ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	3-CIPhN ₂ ⁺	2.2	NMR			25?	MeCN-d ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	4-CIPhN ₂ ⁺	1.7	NMR			25?	MeCN-d ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	4-BrPhN ₂ ⁺	4.94	Spec			50	DCE (anion = BF ₄ ⁻)	594
	4-IPhN ₂ ⁺	4.88	Spec			50	DCE (anion = BF ₄ ⁻)	594
	Ala-Ala ^{†‡}	2.15	Sol/Spec			25?	MeOH	595
	Ala-Asn ^{†‡}	2.20	Sol/Spec			25?	MeOH	595
	Ala-Met ^{†‡}	1.75	Sol/Spec			25?	MeOH	595
	Gly-Gly ^{†‡}	3.37	Sol/Spec			25?	MeOH	595
	Gly-Phe ^{†‡}	3.50	Sol/Spec			25?	MeOH	595
	Phe ^{†‡}	2.52	Sol/Spec			?	MeOH	336
	Trp ^{†‡}	2.42	Fluor	-14.2	-5.86	7	MeOH·H ₂ O (9:1)	596
	Trp ^{†‡}	2.24	Fluor			17	MeOH·H ₂ O (9:1)	596
	Trp ^{†‡}	2.15	Fluor			27	MeOH·H ₂ O (9:1)	596
	Trp ^{†‡}	2.06	Fluor			37	MeOH·H ₂ O (9:1)	596
	Trp ^{†‡}	2.00	Fluor			47	MeOH·H ₂ O (9:1)	596
	Trp ^{†‡}	2.49	Sol/Spec			?	MeOH	336
	tryptamine [†]	3.64	Fluor			7	MeOH·H ₂ O (9:1/v:v)	597
	tryptamine [†]	3.39	Fluor			17	MeOH·H ₂ O (9:1/v:v)	597
	tryptamine [†]	3.25	Fluor	-26.4	-24.7	27	MeOH·H ₂ O (9:1/v:v)	597
	tryptamine [†]	3.10	Fluor			37	MeOH·H ₂ O (9:1/v:v)	597
	tryptamine [†]	3.03	Fluor			47	MeOH·H ₂ O (9:1/v:v)	597
	Tyr ^{†‡}	2.85	Sol/Spec			?	MeOH	336
	cation-4 ^f	5.25	Spec			40	C ₂ H ₂ Cl ₄ (anion = BF ₄ ⁻)	372
	cation-6 ^f	3.40	Fluor			7	MeOH·H ₂ O (9:1/v:v)	597
	cation-6 ^f	3.25	Fluor			17	MeOH·H ₂ O (9:1/v:v)	597
	cation-6 ^f	3.10	Fluor	-30.5	-41.8	27	MeOH·H ₂ O (9:1/v:v)	597
	cation-6 ^f	2.88	Fluor			37	MeOH·H ₂ O (9:1/v:v)	597
	cation-6 ^f	2.69	Fluor			47	MeOH·H ₂ O (9:1/v:v)	597
	cation-7 ^f	3.95	Fluor			7	MeOH·H ₂ O (9:1/v:v)	597
	cation-7 ^f	3.77	Fluor			17	MeOH·H ₂ O (9:1/v:v)	597
	cation-7 ^f	3.57	Fluor	-31.8	-37.7	27	MeOH·H ₂ O (9:1/v:v)	597
	cation-7 ^f	3.38	Fluor			37	MeOH·H ₂ O (9:1/v:v)	597
	cation-7 ^f	3.23	Fluor			47	MeOH·H ₂ O (9:1/v:v)	597
	cation-8 ^f	3.48	Fluor			7	MeOH·H ₂ O (9:1/v:v)	597
	cation-8 ^f	3.33	Fluor			17	MeOH·H ₂ O (9:1/v:v)	597
	cation-8 ^f	3.26	Fluor	-24.7	-20.5	27	MeOH·H ₂ O (9:1/v:v)	597
	cation-8 ^f	3.06	Fluor			37	MeOH·H ₂ O (9:1/v:v)	597
	cation-8 ^f	2.90	Fluor			47	MeOH·H ₂ O (9:1/v:v)	597
18C6-2	Na ⁺	3.17	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	Na ⁺	3.91	ISE			25	MeOH	128,311,317
	K ⁺	4.7	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	5.03	ISE			25	MeOH	128
	K ⁺	5.1	ISE			25	MeOH	311
	K ⁺	5.39	ISE			25	MeOH	317
18C6-3	Na ⁺	3.32	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	4.18	ISE			25	MeOH·H ₂ O (95:5)	140
18C6-4	Na ⁺	3.66	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
18C6-5	Na ⁺	3.27	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	Na ⁺	3.97	ISE			25	MeOH	317
	K ⁺	4.8	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	5.64	ISE			25	MeOH	317
18C6-6	K ⁺	5.54	ISE			25	MeOH	598
18C6-7	Na ⁺	4.17	ISE			25	MeOH	128
	K ⁺	5.56	ISE			25	MeOH	128
18C6-9	Na ⁺	3.72	ISE			25	97.5% MeCN	337
	Na ⁺	3.35	NMR			25	MeCN/MeCN-d ₃ (7:3/v:v)	337
	Na ⁺	4.53	Calc'd			25	MeCN (Na ⁺ + L ⁻ = NaL)	337
	Na ⁺	3.82	ISE			25	MeOH	337
	Na ⁺	3.45	ISE			25	MeOH (anhydrous)	337
18C6-10	Na ⁺	3.67	ISE			25	MeOH	337
18C6-11	H ⁺	3.27	Spec			25	Diox·H ₂ O (1:9/v:v), 0.1 M Me ₄ NBr	340
18C6-12	Na ⁺	3.87	ISE			25	MeOH (absolute)	127
	K ⁺	5.52	ISE			25	MeOH (absolute)	127
18C6-13	Na ⁺	3.87	ISE			25	MeOH (absolute)	127
	K ⁺	5.55	ISE			25	MeOH (absolute)	127
18C6-14	Na ⁺	3.76	ISE			25	MeOH (absolute)	127
	K ⁺	5.40	ISE			25	MeOH (absolute)	127
18C6-15	Na ⁺	3.85	ISE			25	MeOH (absolute)	127
	K ⁺	5.42	ISE			25	MeOH (absolute)	127
18C6-16	H ⁺	7.54	Spec			25	DCE	341
	H ⁺	7.54	Spec			25	Diox·H ₂ O (1:9/v:v), 0.1 M Me ₄ NBr	340
18C6-17	H ⁺	5.93	Pot			25	52.1 wt% MeOH·H ₂ O	599
18C6-18	Na ⁺	3.82	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
18C6-19	Na ⁺	3.88	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
18C6-20	Na ⁺	3.69	ISE			25	MeOH	342
	K ⁺	5.33	ISE			25	MeOH	342
18C6-21	Na ⁺	3.72	ISE			25	MeOH	342
	K ⁺	5.33	ISE			25	MeOH	342
18C6-22	Na ⁺	3.79	ISE			25	MeOH	342
	K ⁺	5.35	ISE			25	MeOH	342
18C6-23	Na ⁺	3.68	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
18C6-24	Na ⁺	3.81	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
18C6-25	Na ⁺	3.24	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	Na ⁺	4.00	ISE			25	MeOH	317
	K ⁺	4.8	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	5.49	ISE			25	MeOH	317
18C6-26	Na ⁺					25	MeOH·H ₂ O (9:1/v:v)	317
	Na ⁺	3.97	ISE			25	MeOH	317
	K ⁺	4.8	ISE			25	MeOH·H ₂ O (9:1/v:v)	317
	K ⁺	5.50	ISE			25	MeOH	317
18C6-27	Na ⁺	3.51	Pot			25	MeOH	312
	K ⁺	5.05	Pot			25	MeOH	312
18C6-28	Na ⁺	4.13	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.38	ISE			25	MeOH (anhydrous)	343
18C6-29	Na ⁺	3.97	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.31	ISE			25	MeOH (anhydrous)	343
18C6-30	Na ⁺	4.20	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.43	ISE			25	MeOH (anhydrous)	343
18C6-31	Na ⁺	4.01	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.34	ISE			25	MeOH (anhydrous)	343
18C6-32	Na ⁺	3.68	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.13	ISE			25	MeOH (anhydrous)	343
18C6-33	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.76	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
18C6-34	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.94	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
18C6-35	Na ⁺	4.09	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.51	ISE			25	MeOH (anhydrous)	343
18C6-36	Na ⁺	4.23	ISE			25	MeOH (anhydrous)	343
	Na ⁺	2.25	NMR			30	Py/Py- <i>d</i> ₅ (1:1), 0.07-0.17 M NaClO ₄	363
	K ⁺	5.52	ISE			25	MeOH (anhydrous)	343
18C6-37	Na ⁺	4.19	ISE			25	MeOH (anhydrous)	343
	K ⁺	5.51	ISE			25	MeOH (anhydrous)	343
18C6-38	Na ⁺	4.15	ISE			25	MeOH (anhydrous)	343
	K ⁺	6.28	ISE			25	MeOH (anhydrous)	343
18C6-39	Na ⁺	3.77	ISE			25	MeOH	600
	K ⁺	5.60	ISE			25	MeOH	600
18C6-40	Na ⁺	3.59	ISE			25	MeOH	600
	K ⁺	5.43	ISE			25	MeOH	600
18C6-41	Na ⁺	4.10	ISE			25	MeOH	600
	K ⁺	5.82	ISE			25	MeOH	600
18C6-42	Na ⁺	4.03	ISE			25	MeOH	600
	K ⁺	5.77	ISE			25	MeOH	600
18C6-43	K ⁺	4.58	ISE			25	MeOH	598
18C6-44	K ⁺	4.49	ISE			25	MeOH	598
Chart XXVI								
18C6-45	H ⁺	4.37(1)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	2.72(2)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	7.77(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	H ⁺	5.75(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Na ⁺	3.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Na ⁺	2.4(NaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Na ⁺	6.7 (NaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Na ⁺ + H ⁺ + L)	601, 603
	K ⁺	4.2	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	3.2(KHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	7.6 (KHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	601, 603
	K ⁺	6.1	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	4.2 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	12 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	602
	Ca ²⁺	5.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Ca ²⁺	9.1(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	5.5 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	13.3 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Ca ²⁺ + H ⁺ + L)	602
	Sr ²⁺	5.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Sr ²⁺	4.2(SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	8.9 (SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	601, 603
	Sr ²⁺	9.3(1)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	5.6 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	13.4 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	602
	Ba ²⁺	6.5	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Ba ²⁺	9.2(1)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	5.6 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	13.4 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl, (Ba ²⁺ + H ⁺ + L)	602
	Cu ²⁺	3.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Zn ²⁺	3.7	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	3.0	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Tl ⁺	5.7	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Tl ⁺	4.6(TlHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Tl ⁺	9.3 (TlHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Tl ⁺ + H ⁺ + L)	601, 603
18C6-46	H ⁺	4.75(1)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	2.34(2)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	2.5	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	3.1	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Ca ²⁺	4.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	5.85	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	4.2(SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	8.9 (SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	601, 603
	Ba ²⁺	5.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Tl ⁺	3.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
18C6-47	H ⁺	5.95	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	H ⁺	6.23	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Na ⁺	4.4	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 9.3	345
	Na ⁺	3.3 (NaHL)	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 3.01	345
	Na ⁺	4.2	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	Na ⁺	3.1	Pot			25	MeOH·H ₂ O (9:1/v/v), (NaHL) 0.1 M Me ₄ NCl	345
	K ⁺	5.8	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 9.3	345
	K ⁺	4.5 (KHL)	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 3.01	345
	K ⁺	5.5	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	K ⁺	4.2 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	Rb ⁺	4.8	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	Rb ⁺	3.8 (RbHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl	345
	Rb ⁺	5.0	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 9.3	345
	Rb ⁺	4.0 (RbHL)	ISE			25	MeOH·H ₂ O (9:1/v/v), 0.1 M Me ₄ NCl, pH 3.01	345
	Ca ²⁺	5.8(1)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	4.1(2)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	5.5(1)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	5.9(2)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	5.5(1)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	5.9(2)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	3.6 (NH ₄ HL)	Pot			25	MeOH·H ₂ O (9:1/v/v), 0.05 M Me ₄ NCl	602

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	NH_4^+	13.0 (NH_4HL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl , ($\text{NH}_4^+ + \text{H}^+ + \text{L}$)	602
	NH_4^+	3.1 ($\text{NH}_4\text{H}_2\text{L}$)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	NH_4^+	18.5 ($\text{NH}_4\text{H}_2\text{L}$)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl ($\text{NH}_4^+ + 2\text{H}^+ + \text{L}$)	602
	NH_4^+	24.7 [(NH_4) ₂ HL]	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl ($2\text{NH}_4^+ + \text{H}^+ + \text{L}$)	602
	NH_4^+	6.0 [(NH_4) ₂ L]	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl ($2\text{NH}_4^+ + \text{L}$)	602
18C6-48	H^+	5.95	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.1 M Me_4NCl	345
	Na^+	4.2	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.1 M Me_4NCl	345
	Na^+	3.1 (NaHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.1 M Me_4NCl	345
18C6-49	H^+	5.95	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.1 M Me_4NCl	345
	K^+	4.4 (KHL)	ISE			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.1 M Me_4NCl , pH 3.01	345
18C6-50	H^+	6.24	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ca^{2+}	3.5(1)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ca^{2+}	3.6(2)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ca^{2+}	nm (CaHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Sr^{2+}	4.1(1)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Sr^{2+}	4.4(2)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Sr^{2+}	nm (SrHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ba^{2+}	4.4(1)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ba^{2+}	3.8(2)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
	Ba^{2+}	nm (BaHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1/v:v), 0.05 M Me_4NCl	602
18C6-51	H^+	8.68(1)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl	604
	H^+	6.28(2)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl	604
	Na^+	4.4	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{Na}^+ + \text{L}$)	604
	Na^+	4.3 (NaHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{Na}^+ + \text{HL}$)	604
	K^+	5.0	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{K}^+ + \text{L}$)	604
	Ca^{2+}	5.1	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{Ca}^{2+} + \text{L}$)	604
	Ca^{2+}	5.0 (CaHL)	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{Ca}^{2+} + \text{HL}$)	604
18C6-52	H^+	6.18	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl	604
	K^+	3.8	Pot			25	$\text{MeOH}\cdot\text{H}_2\text{O}$ (9:1), 0.05 M Me_4NCl ($\text{K}^+ + \text{L}$)	604
18C6-53	Li^+	<1.3	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Na^+	3.42	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	K^+	5.25	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Rb^+	4.30	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Cs^+	3.50	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Sr^{2+}	6.4	Ext			25	100% MeOH	519
	Ba^{2+}	6.6	Ext			25	100% MeOH	519
	Pb^{2+}	6.75	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
18C6-54	Li^+	<2.4	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Na^+	2.60	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	K^+	4.45	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Rb^+	3.75	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Cs^+	<2.3	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519
	Sr^{2+}	3.70	Polg			25	$\text{MeOH}\cdot\text{C}_6\text{H}_6$ (8:2/v:v), 0.025 M Bu_4NClO_4	519

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
18C6-55	Ba ²⁺	3.50	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Li ⁺	<1.6	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Na ⁺	3.0	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	4.95	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	4.70	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	3.70	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Sr ²⁺	4.45	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Ba ²⁺	4.60	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
18C6-56	Pb ²⁺	4.90	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	H ⁺	4.88(1)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	4.29(2)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	2.84(3)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	2.13(4)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	4.5	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Na ⁺	4.1(NaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Na ⁺	9.0 (NaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Na ⁺ + H ⁺ + L)	601, 603
	Na ⁺	1.9 (NaH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Na ⁺	11.1 (NaH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (Na ⁺ + 2H ⁺ + L)	601, 603
	K ⁺	5.48	ISE			25	H ₂ O, I = 0.1, pH 7.0 (Me ₄ N) ₃ PO ₄]	605
	K ⁺	5.0	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (K ⁺ + L ⁺)	606
	K ⁺	4.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	4.7(KHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	9.6 (KHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	601, 603
	K ⁺	3.4(KH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	K ⁺	12.6 (KH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (K ⁺ + 2H ⁺ + L)	601, 603
	Ca ²⁺	8.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Ca ²⁺	7.0(CaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Ca ²⁺	11.9 (CaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Ca ²⁺ + H ⁺ + L)	601, 603
	Sr ²⁺	8.0	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	6.1(SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603
	Sr ²⁺	10.9 (SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	601, 603
	Ba ²⁺	7.2	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ba ²⁺	6.2(BaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ba ²⁺	11.0 (BaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Ba ²⁺ + H ⁺ + L)	601
	Cu ²⁺	5.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ag ⁺	3.0	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (Ag ⁺ + L ⁺)	606
	Zn ²⁺	4.0	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	8.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (Cd ²⁺ + L ⁺)	606
	Cd ²⁺	7.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	6.0(CdHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
Cd ²⁺	10.9 (CdHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Cd ²⁺ + H ⁺ + L)	601	
Tl ⁺	3.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603	
Tl ⁺	4.8(TlHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601, 603	
Tl ⁺	9.7 (TlHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl (Tl ⁺ + H ⁺ + L)	601, 603	
Pb ²⁺	9.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	607	
UO ₂ ²⁺	5.61	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333	
NH ₄ ⁺	3.51	ISE			25	H ₂ O, I = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605	
18C6-57	CH ₃ NH ₃ ⁺	2.88	ISE			25	H ₂ O, I = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	Ph(CH ₂) ₂ NH ₃ ⁺	2.42	ISE			25	H ₂ O, I = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	H ⁺	7.77(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	H ⁺	5.61(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	6.3	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	4.3 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	12.1 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	602
	K ⁺	3.2 (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	3.2 (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	9.4(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	6.0 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	13.8 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Ca ²⁺ + H ⁺ + L)	602
	Sr ²⁺	10.1(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	6.6 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	14.4 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	602
	Ba ²⁺	9.8(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	6.3 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	14.1 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Ba ²⁺ + H ⁺ + L)	602
18C6-58	K ⁺	1.85	ISE			25	H ₂ O, $I = 0.1$, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	NH ₄ ⁺	0.70	ISE			25	H ₂ O, $I = 0.1$, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	cation-12 ^f	4.48	Spec			25	MeCN	608
18C6-59	H ⁺	7.38(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	5.32(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	7.38(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	609
	H ⁺	5.32(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	609
	K ⁺	5.4	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	3.6 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	2.7 (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	5.4	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	3.6 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	K ⁺	11.0 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	602
	K ⁺	2.7 (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	8.9(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	5.3 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	12.7 (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Ca ²⁺ + H ⁺ + L)	602
	Sr ²⁺	8.9(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	5.4 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	12.8 (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Sr ²⁺ + H ⁺ + L)	602
	Ba ²⁺	8.0(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	4.3 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	12.1 (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl (Ba ²⁺ + H ⁺ + L)	602
	NH ₄ ⁺	5.2 (NH ₄ HL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.05 M Me ₄ NCl	602

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	NH ₄ ⁺	14.6 (NH ₄ HL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl, (NH ₄ ⁺ + H ⁺ + L)	602
	NH ₄ ⁺	2.7 (NH ₄ H ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	19.5 (NH ₄ H ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	26.8 [(NH ₄) ₂ H ₂ L]	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl (2NH ₄ ⁺ + 2H ⁺ + L)	602
	NH ₄ ⁺	8.1 [(NH ₄) ₂ L]	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl (2NH ₄ ⁺ + L)	602
18C6-60	H ⁺	7.04(1)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.1 M Me ₄ NCl	609
	H ⁺	6.26(2)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.1 M Me ₄ NCl	609
	H ⁺	7.04(1)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	H ⁺	6.26(2)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	K ⁺	6.4	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.1 M Me ₄ NCl	609
	K ⁺	4.7 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.1 M Me ₄ NCl	609
	K ⁺	none (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.1 M Me ₄ NCl	609
	K ⁺	6.4	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	K ⁺	4.8 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	K ⁺	11.8 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl (K ⁺ + H ⁺ + L)	602
	Ca ²⁺	10.1(1)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Ca ²⁺	nm (CaHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	10.0(1)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Sr ²⁺	nm (SrHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	9.5(1)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm(2)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	Ba ²⁺	nm (BaHL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	5.3 (NH ₄ HL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	14.7 (NH ₄ HL)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl (NH ₄ ⁺ + H ⁺ + L)	602
	NH ₄ ⁺	3.3 (NH ₄ H ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl	602
	NH ₄ ⁺	20.1 (NH ₄ H ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v.v), 0.05 M Me ₄ NCl, (NH ₄ ⁺ + 2H ⁺ + L)	602
18C6-61	H ⁺	10.61(1)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	H ⁺	8.15(2)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	H ⁺	6.17(3)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	H ⁺	4.20(4)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	Na ⁺	5.6	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Na ⁺ + L ²)	604
	Na ⁺	4.7 (NaHL)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Na ⁺ + HL ⁻)	604
	Na ⁺	4.5 (NaH ₂ L)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Na ⁺ + H ₂ L)	604
	K ⁺	5.4	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + L ²)	604
	K ⁺	4.3 (KHL)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + HL ⁻)	604
	K ⁺	4.2 (KH ₂ L)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + H ₂ L)	604
	Ca ²⁺	9.7	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Ca ²⁺ + L ²)	604
	Ca ²⁺	8.3 (CaHL)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Ca ²⁺ + HL ⁻)	604

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
18C6-62	Ca ²⁺	7.8 (CaH ₂ L)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (Ca ²⁺ + H ₂ L)	604
	H ⁺	8.05(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	5.67(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	8.05(1)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	H ⁺	5.67(2)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	K ⁺	5.4	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + L ²⁻)	604
	K ⁺	4.4 (KHL)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + HL)	604
	K ⁺	5.4	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
18C6-63	K ⁺	4.4 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	3.0 (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	7.02(1)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	6.09(2)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	H ⁺	7.02(1)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	H ⁺	6.09(2)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl	604
	K ⁺	6.8	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	5.1 (KHL)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
18C6-64	K ⁺	none (K ₂ L)	Pot			25	MeOH·H ₂ O (9:1/v:v), 0.1 M Me ₄ NCl	609
	K ⁺	6.8	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + L ²⁻)	604
	K ⁺	5.1 (KHL)	Pot			25	MeOH·H ₂ O (9:1), 0.05 M Me ₄ NCl (K ⁺ + HL)	604
	NH ₄ ⁺	3.2	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	610
	HONH ₃ ⁺	4.0	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	610
	18C6-65	HONH ₃ ⁺	1.6	Pot		25	H ₂ O, 0.1 M Me ₄ NCl	610
	18C6-66	Na ⁺	6.30	Spec		25	MeCN	608
	cation-9'	5.0	Spec		25	MeCN	608	
18C6-67	cation-11'	>5.0	Spec		25	MeCN	608	
	cation-12'	4.0	Spec		25	MeCN	608	
	cation-13'	4.18	Spec		25	MeCN	608	
	Na ⁺	6.30	Spec		25	MeCN	608	
18C6-68	cation-9'	>6.0	Spec		25	MeCN	608	
	cation-11'	>6.0	Spec		25	MeCN	608	
	cation-12'	4.60	Spec		25	MeCN	608	
	cation-13'	4.60	Spec		25	MeCN	608	
	Li ⁺	4.43	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.68	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	7.54	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.55	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
18C6-69	Cs ⁺	5.72	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	7.82	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	5.39	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.26	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.63	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	8.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	7.27	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
18C6-70	Cs ⁺	6.22	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	7.38	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	5.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.75	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	6.78	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.35	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.27	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	6.19	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	4.70	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.48	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
18C6-71	Li ⁺	4.76	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.91	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	8.20	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	7.31	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	6.26	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	7.38	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	5.78	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.68	Solv Extr.-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
18C6-72	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.49	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
18C6-73	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.64	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
18C6-74	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.30	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
18C6-75	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.23	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
18C6-76	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.66	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
18C6-77	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.90	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	612
	PhCH ₂ NH ₃ ⁺	>7.00	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	612
18C6-78	Na ⁺	3.59	ISE			25	MeOH (anion = Cl ⁻)	611
	K ⁺	4.48	ISE			25	MeOH (anion = Cl ⁻)	611
	Rb ⁺	4.66	ISE			25	MeOH (anion = Cl ⁻)	611
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<1.48	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
	PhCH ₂ NH ₃ ⁺	5.32	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
18C6-79	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<1.48	Solv Extr.-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	611
18C6-80	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<1.48	Solv Extr.-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	613
	PhCH ₂ NH ₃ ⁺	5.32	Solv Extr.-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	613
18C6-81	C ₂ H ₅ NH ₃ ⁺	2.42	NH ₄ ⁺ ISE			25	H ₂ O, pH 7	614
	(CH ₃) ₂ NH ₂ ⁺	<0.70	NH ₄ ⁺ ISE			25	H ₂ O, pH 7	614
	guanidinium	1.65	NH ₄ ⁺ ISE			25	H ₂ O, pH 7	614
18C6-82	K ⁺	2.26	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	NH ₄ ⁺	1.00	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	CH ₃ NH ₃ ⁺	<1.00	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
18C6-83	K ⁺	4.74	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	NH ₄ ⁺	2.53	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	CH ₃ NH ₃ ⁺	1.98	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	PhCH ₂ NH ₃ ⁺	2.16	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	Ph(CH ₂) ₂ NH ₃ ⁺	2.00	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	*H ₃ N(CH ₂) ₂ NH ₃ ⁺	3.48	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	*H ₃ N(CH ₂) ₃ NH ₃ ⁺	2.90	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	*H ₃ N(CH ₂) ₄ NH ₃ ⁺	2.76	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	cation-9 ^f	3.36	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
	cation-10 ^f	2.60	ISE			25	H ₂ O, <i>I</i> = 0.1, pH 7.0 [(Me ₄ N) ₃ PO ₄]	605
				Chart XXVII				
18C6-84	Na ⁺	2.94	ISE			25	MeOH	128, 308
	K ⁺	3.86	ISE			25	MeOH	128, 308

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
18C6-85	H ⁺	5.07(1)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	4.73(2)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	4.43(3)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	3.29(4)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	2.67(5)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	H ⁺	1.0(6)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	5.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	5.1(NaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	10.2	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(NaHL)					(Na ⁺ + H ⁺ + L)	601
	Na ⁺	4.0(NaH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	13.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(NaH ₂ L)					(Na ⁺ + 2H ⁺ + L)	601
	Na ⁺	3.2(NaH ₃ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Na ⁺	17.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(NaH ₃ L)					(Na ⁺ + 3H ⁺ + L)	601
	K ⁺	4.1	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	K ⁺	5.3(KHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	K ⁺	10.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(KHL)					(K ⁺ + H ⁺ + L)	601
	K ⁺	4.0(KH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	K ⁺	14.7	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(KH ₂ L)					(K ⁺ + 2H ⁺ + L)	601
	K ⁺	3.2(KH ₃ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	K ⁺	17.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(KH ₃ L)					(K ⁺ + 3H ⁺ + L)	601
	Ca ²⁺	9.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ca ²⁺	8.6(CaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ca ²⁺	13.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CaHL)					(Ca ²⁺ + H ⁺ + L)	601
	Ca ²⁺	6.7(CaH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ca ²⁺	16.5	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CaH ₂ L)					(Ca ²⁺ + 2H ⁺ + L)	601
	Ca ²⁺	4.1(CaH ₃ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ca ²⁺	18.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CaH ₃ L)					(Ca ²⁺ + 3H ⁺ + L)	601
	Sr ²⁺	10.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Sr ²⁺	8.8(SrHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Sr ²⁺	13.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(SrHL)					(Sr ²⁺ + H ⁺ + L)	601
	Sr ²⁺	6.8(SrH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Sr ²⁺	16.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(SrH ₂ L)					(Sr ²⁺ + 2H ⁺ + L)	601
	Ba ²⁺	9.5	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ba ²⁺	8.8(BaHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ba ²⁺	13.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(BaHL)					(Ba ²⁺ + H ⁺ + L)	601
	Ba ²⁺	6.5(BaH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Ba ²⁺	16.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(BaH ₂ L)					(Ba ²⁺ + 2H ⁺ + L)	601
	La ³⁺	12.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	607
	Cu ²⁺	7.1	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cu ²⁺	6.0(CuHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cu ²⁺	11.1	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CuHL)					(Cu ²⁺ + H ⁺ + L)	601
	Zn ²⁺	6.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Zn ²⁺	5.2(ZnHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Zn ²⁺	10.2	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(ZnHL)					(Zn ²⁺ + H ⁺ + L)	601
	Cd ²⁺	9.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	8.2(CdHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	13.6	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CdHL)					(Cd ²⁺ + H ⁺ + L)	601
	Cd ²⁺	6.6(CdH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Cd ²⁺	16.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(CdH ₂ L)					(Cd ²⁺ + 2H ⁺ + L)	601
	Tl ⁺	4.4	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Tl ⁺	5.8(TlHL)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Tl ⁺	10.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(TlHL)					(Tl ⁺ + H ⁺ + L)	601
	Tl ⁺	5.1(TlH ₂ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Tl ⁺	14.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(TlH ₂ L)					(Tl ⁺ + 2H ⁺ + L)	601
	Tl ⁺	3.5(TlH ₃ L)	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	601
	Tl ⁺	17.8	Pot			25	H ₂ O, 0.05 M Me ₄ NCl	
		(TlH ₃ L)					(Tl ⁺ + 3H ⁺ + L)	601
18C6-86	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.20	Solv Extr-NMR (SCN ⁻ Anal)			0	D ₂ O sat'd CDCl ₃ (anion = SCN ⁻)	512
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.93	Solv Extr-NMR (SCN ⁻ Anal)			24	D ₂ O sat'd CDCl ₃ (anion = SCN ⁻)	512
18C6-87	K ⁺	9.37	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615
	Tl ⁺	8.28	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615
18C6-88	K ⁺	9.36	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615
	Tl ⁺	8.26	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
18C6-89	K ⁺	10.07	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615	
	Tl ⁺	9.36	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)		
18C6-90	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.41	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125	
18C6-91	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.26	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125	
18C6-92	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.65	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125	
18C6-93	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.11	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125	
18C6-94	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.65	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	346	
18C6-95	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.18	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	347	
18C6-96	Li ⁺	2.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478	
	Na ⁺	3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
	K ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
	Rb ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
	NH ₄ ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
	CH ₃ NH ₃ ⁺	3.9	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)		
									477, 478
				Chart XXVIII					
18C6-97	K ⁺	4.37	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	3.82	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-98	K ⁺	4.47	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	3.67	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-99	K ⁺	4.37	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	3.59	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-100	K ⁺	4.16	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	3.96	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-101	K ⁺	4.87	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	4.45	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-102	K ⁺	4.40	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	3.53	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-103	K ⁺	4.70	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	4.34	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-104	K ⁺	4.42	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	4.01	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-105	K ⁺	4.50	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)	616	
	NH ₄ ⁺	4.09	Solv Extr-UV (Pic Anal)			20	D ₂ O sat'd CDCl ₃ (anion = picrate)		
18C6-106	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.34	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	617	
	PhCH ₂ NH ₃ ⁺	>7.00	Solv Extr-NMR (SCN ⁻ Anal)			20-25	CDCl ₃ (anion = SCN ⁻)		
18C6-107	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.04	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	617	
	PhCH ₂ NH ₃ ⁺	>7.00	Solv Extr-NMR (SCN ⁻ Anal)			20-25	CDCl ₃ (anion = SCN ⁻)		
18C6-108	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.48	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	617	
	PhCH ₂ NH ₃ ⁺	>7.00	Solv Extr-NMR (SCN ⁻ Anal)			20-25	CDCl ₃ (anion = SCN ⁻)		
18C6-109	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.94	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	617	
	PhCH ₂ NH ₃ ⁺	4.36	Solv Extr-NMR (SCN ⁻ Anal)			20-25	CDCl ₃ (anion = SCN ⁻)		
18C6-110	K ⁺	5.26	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619	
18C6-111	K ⁺	4.19	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
18C6-112	K ⁺	4.53	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619
18C6-113	K ⁺	5.51	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619
18C6-114	K ⁺	4.29	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619
18C6-115	Li ⁺	3.99	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	Na ⁺	3.95	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	K ⁺	4.94	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619
	K ⁺	4.87	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	620
	K ⁺	4.93	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	NH ₄ ⁺	4.06	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<1.70	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	621
Chart XXIX								
18C6-116	Li ⁺	4.14	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	Na ⁺	4.05	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	K ⁺	4.88	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619
	K ⁺	4.95	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	620
	K ⁺	5.04	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	NH ₄ ⁺	4.12	Solv Extr-UV (Pic Anal)			22	CHCl ₃ (anion = picrate)	620
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<1.70	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	621
18C6-117	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.76	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	621
18C6-118	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.67	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	621
18C6-ene-1	Na ⁺	6.41	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	7.59	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	NH ₄ ⁺	6.20	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
18C6-diene-1	Na ⁺	5.54	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	Na ⁺	3.20	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	5.90	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	2.70	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	<2.2	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	<2.3	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Sr ²⁺	3.40	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Ba ²⁺	3.20	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Pb ²⁺	3.70	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	NH ₄ ⁺	4.79	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
18C6-diene-2	Na ⁺	5.69	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	8.08	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	NH ₄ ⁺	7.64	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
18C6-diene-3	Na ⁺	4.95	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	7.32	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	NH ₄ ⁺	6.68	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
18C6-diene-4	Na ⁺	6.60	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	8.40	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	NH ₄ ⁺	7.04	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
18C6-diene-5	Na ⁺	6.26	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622
	K ⁺	8.30	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	NH_4^+	7.04	Solv Extr-UV (Pic Anal)			20-22	CDCl_3 (anion = picrate)	622
K18C6-1	Na^+	3.27	ISE			25	MeOH	348
	K^+	4.18	ISE			25	MeOH	348
K18C6-2	Na^+	3.07	ISE			25	MeOH	348
	K^+	4.05	ISE			25	MeOH	348
K18C6-3	Na^+	2.90	ISE			25	MeOH	348
	K^+	3.84	ISE			25	MeOH	348
K18C6-4	Na^+	3.23	ISE			25	MeOH	348
	K^+	4.23	ISE			25	MeOH	348
K18C6-5	Na^+	2.93	ISE			25	MeOH	348
	K^+	3.99	ISE			25	MeOH	348
K ₂ 18C6-1	Na^+	2.50	Cal	-9.50	16.0	25	MeOH, $I = 0.005$	514, 623
	K^+	2.79	Cal	-24.6	-28.9	25	MeOH, $I = 0.005$	514, 623
	Rb^+	2.09	Cal	-29.2	-58.1	25	MeOH, $I = 0.005$	514, 623
	Ba^{2+}	3.13	Cal	-1.67	54.3	25	MeOH, $I = 0.005$	512, 623
	$\text{Eu}^{3+}, 3\text{Fod}^-$	1.52-1.93	NMR			30	CDCl_3 (Fod = heptafluoro- dimethyloctanedionate)	113
	$\text{Eu}^{3+}, 3\text{Fod}^-$	1.36-3.15	NMR			30	C_6D_6 (Fod = heptafluoro- dimethyloctanedionate)	113
	Ag^+	2.50	Cal	-3.40	26.4	25	MeOH, $I = 0.005$	514, 623
	NH_4^+	nm	Cal			25	MeOH, $I = 0.005$	514, 623
K ₂ 18C6-2	Na^+	2.29	ISE			25	MeOH	348
	K^+	2.70	ISE			25	MeOH	348
K ₃ 18C6-1	Na^+	2.12	Polg			25	EtOH, 0.025 M Bu_4NI	297
	K^+	<2	Polg			25	EtOH, 0.025 M Bu_4NI	297
K ₃ 18C6-2	Na^+	2.09	Polg			25	EtOH, 0.025 M Bu_4NI	297
	K^+	<2	Polg			25	EtOH, 0.025 M Bu_4NI	297
Cy ₂ 18C6-1	K^+	1.79 Cal	-24.2	-51.0		10	H_2O	624
	K^+	1.63 Cal	-21.2	-40.2		25	H_2O	624
	K^+	1.50 Cal	-17.5	-27.2		40	H_2O	624
	Rb^+	0.95 Cal	-19.2	-49.8		10	H_2O	624
	Rb^+	0.87 Cal	-16.6	-38.9		25	H_2O	624
	Rb^+	0.86 Cal	-13.8	-27.6		40	H_2O	624
	Sr^{2+}	2.80 Cal	-14.4	2.51		10	H_2O	624
	Sr^{2+}	2.64 Cal	-13.2	6.28		25	H_2O	624
	Sr^{2+}	2.56 Cal	-12.2	10.0		40	H_2O	624
	Ba^{2+}	3.44 Cal	-28.5	-34.7		10	H_2O	624
	Ba^{2+}	3.27 Cal	-25.9	-24.3		25	H_2O	624
	Ba^{2+}	3.12	Cal	-24.2	-17.6	40	H_2O	624
	Ag^+	1.59	Cal	-8.74	1.26	25	H_2O	624
	Tl^+	3.30	Polg			23	DMF	586
	Tl^+	4.95	Polg			23	MeOH	586
	UO_2^{2+}	5.69	Spec			25	PC, 0.1 M Et_4NClO_4	334
Cy ₂ 18C6-2	NH_4^+	0.80	Cal	-14.3	-32.6	25	H_2O	624
	K^+	2.15	Cal	-17.3	-20.1	10	H_2O	624
	K^+	2.02	Cal	-16.2	-15.9	25	H_2O	624
	K^+	1.91	Cal	-15.0	-11.3	40	H_2O	624
	Rb^+	1.61	Cal	-14.4	-20.1	10	H_2O	624
	Rb^+	1.52	Cal	-13.9	-17.6	25	H_2O	624
	Rb^+	1.40	Cal	-13.8	-17.2	40	H_2O	624
	Cs^+	1.00	Cal	-10.0	-16.3	10	H_2O	624
	Cs^+	0.96	Cal	-10.1	-15.5	25	H_2O	624
	Cs^+	0.96	Cal	-9.96	-13.4	40	H_2O	624
	Sr^{2+}	3.43	Cal	-15.4	11.3	10	H_2O	624
	Sr^{2+}	3.24	Cal	-15.4	10.5	25	H_2O	624
	Sr^{2+}	3.16	Cal	-15.5	10.9	40	H_2O	624
	Ba^{2+}	3.84	Cal	-20.8	0.0	10	H_2O	624
	Ba^{2+}	3.57	Cal	-20.6	-0.84	25	H_2O	624
	Ba^{2+}	3.47	Cal	-20.3	1.67	40	H_2O	624
	Tl^+	2.78	NMR			25	DMF	587
	Tl^+	>5	NMR			25	MeCN	587
	Tl^+	>5	NMR			25	Me_2CO	587
	Tl^+	1.26	NMR			25	Me_2SO	587
	Tl^+	>5	NMR			25	NMe	587
	Tl^+	4.10	NMR			25	Sulfolane	587
	UO_2^{2+}	6.24	Spec			25	PC, 0.1 M Et_4NClO_4	334
Cy ₂ 18C6-3	NH_4^+	1.33	Cal	-9.04	-5.02	25	H_2O	624
	H^+	-0.70	Mac Dist-UV (Pic Anal)			15	H_2O , 0.5 M HCl	290
	H^+	-0.44	Mac Dist-UV (Pic Anal)			20	H_2O , 0.5 M HCl	290
	H^+	-0.29	Mac Dist-UV 71.1 (Pic Anal)	234		25	H_2O , 0.5 M HCl	290
	H^+	-0.24	Mac Dist-UV (Pic Anal)			25	H_2O , 1.0 M HCl	290
	H^+	-0.15	Mac Dist-UV (Pic Anal)			25	H_2O , 2.0 M HCl	290
	H^+	-0.07	Mac Dist-UV (Pic Anal)			30	H_2O , 0.5 M HCl	290
	H^+	>5	Cal	-42.8	12.8	25	MeCN (anion = CF_3SO_3^-)	93
	H^+	8.2	Cond			25	MeCN	625
	Li^+	4.71	Solv Extr-UV (Pic Anal)			25	D_2O sat'd CDCl_3 (anion = picrate)	493
	Li^+	5.28	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	269
	Na^+	6.37	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	269

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Na ⁺	6.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺	4.60	Pot			25	EtOH-H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Na ⁺	4.93	Cond	-51.7	-78.9	25	MeCN (anion = BPh ₄)	626
	Na ⁺	5.33	ISE	-20.0	34.6	25	MeCN 0.05 M Et ₄ NClO ₄	298
	Na ⁺	4.27	Cal	-19.9	15	25	MeOH	305
	Na ⁺		Kin	-8.37		25	MeOH [step 2 + 3: Na ⁺ ...L = (NaL) ⁺] ^e	529
	Na ⁺	3.32	ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Na ⁺	5.70	Pot			25	PC, 0.1 M Et ₄ NClO ₄	545
	K ⁺	4.97	Solv Extr-UV			25?	Acetophenone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	4.17	Solv Extr-UV			25?	Adiponitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	2.53	Solv Extr-UV			25?	<i>t</i> -Amyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	3.58	Solv Extr-UV			25?	Benzyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	8.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	3.10	Solv Extr-UV			25?	Cyclohexanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	3.97	Solv Extr-UV			25?	Cyclohexanone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	2.59	Solv Extr-UV			25?	1,4-Dioxaspiro[4,5]decane (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺		Kin	7.53		40	DMF [step 2: K ⁺ ...L = K ⁺ L] ^e	529
	K ⁺		Kin	-12.6		40	DMF [step 3: K ⁺ L = (KL) ⁺] ^e	529
	K ⁺	5.00	Solv Extr-UV			25?	Isobutyronitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	5.53	Cond	-66.8	-122.8	25	MeCN (anion = BPh ₄)	626
	K ⁺	6.19	ISE	-29.6	18.8	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	K ⁺	>5	Cal	-44.4	-35	25	MeOH	305
	K ⁺	5.63	Cal	-45.2		25	MeOH	369
	K ⁺	5.65	ISE			25	MeOH	369
	K ⁺	3.70	Solv Extr-UV			25?	Phenylacetone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	3.85	Solv Extr-UV			25?	2-Phenylethanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	6.75	Cond			20	<i>i</i> -PrOH-H ₂ O (2:8/v:v)	627
	K ⁺	6.99	Cond			20	<i>i</i> -PrOH-H ₂ O (5:5/v:v)	627
	K ⁺	2.94	Solv Extr-UV			25?	2-(Tetrahydrofurfuryloxy) tetrahydropyran (anion = 4-NO ₂ PhO ⁻)	551
	Rb ⁺	6.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	5.60	Pot			25	EtOH-H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Rb ⁺	6.05	Cal	-24.5	33.2	25	MeCN	298
	Rb ⁺	4.67	Cond	-47.7	-71.4	25	MeCN (anion = BPh ₄)	626
	Rb ⁺	4.88	Cal	-35.8	-27	25	MeOH	305
	Cs ⁺	6.25	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	3.26	NMR			25	DMAC	318
	Cs ⁺	3.5	NMR			25	DMF	318
	Cs ⁺	none	NMR			25	Form (insoluble ligand)	318
	Cs ⁺	5.40	Cal	-23.7	23.5	25	MeCN	298
	Cs ⁺	4.06	Cond	-50.1	-89.7	25	MeCN (anion = BPh ₄)	626
	Cs ⁺	4.25(1)	Cal	-32.1	-27	25	MeOH	305
	Cs ⁺	2.84(2)	Cal	-28.1	-40	25	MeOH	305
	Cs ⁺	1.7	NMR			25	NMF	318
	Mg ²⁺	2.10	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	3.54	Cal	1.8	72	25	MeOH	305
	Ca ²⁺	3.52	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	2.46				25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	(Ca ₂ L)	Polg			25	MeOH, 0.1 M Et ₄ NI	319
	Ca ²⁺	3.47	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Sr ²⁺	>5	Cal	-16.4		25	MeOH	305
	Sr ²⁺	5.50	Cal	-18.5		25	MeOH	369
	Ba ²⁺	>5	Cal	-48.1		25	MeCN	298
	Ba ²⁺	>5	Cal	-34.4		25	MeOH	305
	Ba ²⁺	5.84	Cal	-34.3		25	MeOH (Ba ²⁺ competes with Na ⁺)	369
	Ba ²⁺	5.91	Cal	-34.4		25	MeOH (Ba ²⁺ competes with Ag ⁺)	369
	La ³⁺	2.54	Cond			24.6	EtOH (anion = NO ₃ ⁻)	349
	La ³⁺	3.63	Cond			24.6	EtOH (anion = SCN ⁻)	349
	La ³⁺	3.44	Cond			24.6	EtOH (anion = Cl ⁻)	349
	La ³⁺	3.65	Cond			24.6	EtOH (anion = ClO ₄ ⁻)	349
	La ³⁺	12.54	Cal	-25.34	155.2	25	MeCN (anion = NO ₃ ⁻)	568
	La ³⁺	3.73	Cond			24.6	MeCN (anion = NO ₃ ⁻)	349
	La ³⁺	3.87	Cond			24.6	MeCN (anion = Cl ⁻)	349
	La ³⁺	2.45	Cond			24.6	MeOH (anion = NO ₃ ⁻)	349
	La ³⁺	2.60	Cond			24.6	MeOH (anion = SCN ⁻)	349
	La ³⁺	2.63	Cond			24.6	MeOH (anion = Cl ⁻)	349
	La ³⁺	2.68	Cond			24.6	MeOH (anion = ClO ₄ ⁻)	349
	La ³⁺	2.49	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Ce ³⁺	2.36	Cond			24.6	EtOH (anion = NO ₃ ⁻)	349
	Ce ³⁺	3.28	Cond			24.6	EtOH (anion = SCN ⁻)	349

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ce ³⁺	3.32	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Ce ³⁺	3.51	Cond			24.6	EtOH (anion = ClO ₄ ⁻)	349
	Ce ³⁺	2.85	Cond			24.6	MeCN (anion = NO ₃ ⁻)	349
	Ce ³⁺	3.27	Cond			24.6	MeCN (anion = Cl ⁻)	349
	Ce ³⁺	2.20	Cond			24.6	MeOH (anion = NO ₃ ⁻)	349
	Ce ³⁺	2.41	Cond			24.6	MeOH (anion = SCN ⁻)	349
	Ce ³⁺	2.46	Cond			24.6	MeOH (anion = Cl ⁻)	349
	Ce ³⁺	2.57	Cond			24.6	MeOH (anion = ClO ₄ ⁻)	349
	Ce ³⁺	2.05	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Pr ³⁺	3.30	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Pr ³⁺	1.62	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Nd ³⁺	3.19	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Nd ³⁺	<1.3	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Sm ³⁺	2.98	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Eu ³⁺	2.83	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Gd ³⁺	2.58	Cond			24.6	EtOH (anion = Cl ⁻)	349
	Co ²⁺ , 2TTA ⁻	3.57	Solv Extr- Rad			25?	CHCl ₃ (TTA = thenoyl- trifluoroacetate)	118
	Co ²⁺	3.60	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Co ²⁺	4.71	Pot	-35.0(Cal)	-27.5	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ni ²⁺	2.34	Polg			25	MeOH, 0.1 M Et ₄ Ni	319
	Cu ²⁺	2.90	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Cu ²⁺	2.64						
		(Cu ₂ L)	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Cu ²⁺	6.48	Pot	-31.7(Cal)	17.1	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	4.80	Pot			25	EtOH·H ₂ O (9:1/v:v), 0.1 M Bu ₄ NClO ₄	354
	Ag ⁺	nm	Cal/Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Ag ⁺	4.64	Cal	-22.8	12	25	MeOH	305
	Ag ⁺	4.76	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	305
	Zn ²⁺	2.39	Polg			25	MeOH, 0.1 M Et ₄ Ni	319
	In ³⁺	2.63	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	In ³⁺	2.67	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	328
	Tl ⁺	3.20	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Tl ⁺	3.18	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	329
	Pb ²⁺	5.39	d.c. Polg			25	H ₂ O, 0.1 M HNO ₃	119, 370
	Pb ²⁺	5.37	a.c. Polg			25	H ₂ O, 0.1 M HNO ₃	119, 370
	Pb ²⁺	7.47	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	Pb ²⁺	6.57(Pb ₂ L)	Polg			25	MeOH, 0.1 M Bu ₄ NClO ₄	319
	UO ₂ ²⁺	5.63	Pot			25	PC, 0.1 M Et ₄ NClO ₄	545
	UO ₂ ²⁺	5.75	Spec			25	PC, 0.1 M Et ₄ NClO ₄	545
	NH ₄ ⁺	7.83	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	CH ₃ NH ₃ ⁺	6.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.12	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.98	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.56	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
	Ph(CH ₂) ₂ NH ₃ ⁺	4.36	ISE			25?	MeOH·H ₂ O (95:5)	628
				Chart XXX				
B18C6-1	H ⁺	3.78	Cal	-32.1	-35.6	25	MeCN	629
	Li ⁺	5.77	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	
	Li ⁺	1.8	Cal	5.5	53	25	MeCN (anion = SCN ⁻)	349a
	Li ⁺	nm	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	129
	Na ⁺	1.38	ISE			25	H ₂ O (anion = Cl ⁻)	631
	Na ⁺	5.65	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	632
	Na ⁺	4.71	Cal	-17.2	32	25	MeCN (anion = SCN ⁻)	349a
	Na ⁺	3.62	ISE			25	MeOH·H ₂ O (9:1/w:w)	129
	Na ⁺	3.23(1)	ISE			25	MeOH·H ₂ O (8:2/w:w), 0.1 M Et ₄ NCl	302
	Na ⁺	1.61(2)	ISE			25	MeOH·H ₂ O (8:2/w:w), 0.1 M Et ₄ NCl	633
	Na ⁺	4.21	Cal	-34.6	-35.6	25	MeOH	633
	Na ⁺	4.53	ISE			25	MeOH	331
	Na ⁺	1.70	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	634
	K ⁺	1.84	Cond			15	H ₂ O (anion = Cl ⁻)	631
	K ⁺	1.80	Cond			20	H ₂ O (anion = Cl ⁻)	635
	K ⁺	1.744	Cond	-18.1	-27.5	25	H ₂ O (anion = Cl ⁻)	632, 635
	K ⁺	1.685	Cond			30	H ₂ O (anion = Cl ⁻)	635
	K ⁺	1.66	Cond			32	H ₂ O (anion = Cl ⁻)	635
	K ⁺	1.79	ISE			25	H ₂ O (anion = Cl ⁻)	632
	K ⁺	1.70(1)	ISE			25	H ₂ O 0.1 M Et ₄ NCl	633
	K ⁺	0.48(2)	ISE			25	H ₂ O 0.1 M Et ₄ NCl	633
	K ⁺	7.20	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	
	K ⁺	3.31	Pot			25	DMF	349a
	K ⁺	4.75	Cal	-22.2	16	25	MeCN (anion = SCN ⁻)	528
	K ⁺	5.25	Pot			25	MeCN	129
	K ⁺	4.75	ISE			25	MeOH	528
	K ⁺	3.82	Cal	-63.26	-139.1	25	MeOH·H ₂ O (9:1/w:w)	302
							MeOH·H ₂ O (8:2)	131

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	4.20(1)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.1 M Et ₄ NCl	633
	K ⁺	2.32(2)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.1 M Et ₄ NCl	633
	K ⁺	4.41(1)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.01 M Et ₄ NClO ₄	633
	K ⁺	3.11(2)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.01 M Et ₄ NClO ₄	633
	K ⁺	5.29	Cal	-44.85	-49.0	25	MeOH	331
	K ⁺	5.05	ISE			25	MeOH	634
	K ⁺	5.2	Pot			25	MeOH	366
	K ⁺	2.85	Spec			25	Me ₂ SO·H ₂ O (99:1/v/v)	631
	K ⁺	5.38	Pot			25	PC	528
	Rb ⁺	1.15	Cond			25	H ₂ O (anion = Cl ⁻)	632
	Rb ⁺	6.58	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Rb ⁺	4.48	Cal	-43.0	-58.4	25	MeOH	331
	Rb ⁺	4.63(1)	Pot			25	MeOH	366
	Rb ⁺	1.37(2)	Pot			25	MeOH	366
	Rb ⁺	2.49	Spec			25	Me ₂ SO·H ₂ O (99:1/v/v)	631
	Cs ⁺	0.88	Calc'd			25	H ₂ O (anion = Cl ⁻)	632
	Cs ⁺	6.28	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Cs ⁺	3.45	ISE			25	MeOH·H ₂ O (9:1/w/w)	302
	Cs ⁺	2.96(1)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.1 M Et ₄ NCl	633
	Cs ⁺	0.60(2)	ISE			25	MeOH·H ₂ O (8:2/w/w), 0.1 M Et ₄ NCl	633
	Cs ⁺	3.95(1)	Cal	-42.30	-66.1	25	MeOH	331
	Cs ⁺	2.33(2)	Cal	-43	-101	25	MeOH	331
	Cs ⁺	4.04(1)	Pot			25	MeOH	366
	Cs ⁺	2.56(2)	Pot			25	MeOH	366
	Cs ⁺	2.25	Spec			25	Me ₂ SO·H ₂ O (99:1/v/v)	631
	Ca ²⁺	5.2	Cal	-18.1	38	25	MeCN (anion = SCN ⁻)	129
	Ca ²⁺	2.28	Cal	-8.62	14.7	25	MeOH	331
	Sr ²⁺	2.41	Cond			25	H ₂ O (anion = NO ₃ ⁻)	632
	Sr ²⁺	5.12	Cal	-19.6	32.1	25	MeOH	331
	Ba ²⁺	2.90	Cond			25	H ₂ O (anion = NO ₃ ⁻)	632
	Ba ²⁺	2.28	Pot			20	H ₂ O, 0.1 M Me ₄ NBr (L competes with A ₂ 15C5-3)	422
	Ba ²⁺	5.48	Cal	-37.2	-19.9	25	MeOH	331
	Co ²⁺	2.97	Pot	-43.1(Cal)	-87.9	25	PC, 0.01 M Et ₄ NClO ₄	117
	Cu ²⁺	4.51	Pot	-54.5(Cal)	-97.0	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	1.83	ISE			25	H ₂ O (anion = NO ₃ ⁻)	632
	Ag ⁺	4.23	Cal	-39.7	-52.3	25	MeOH	331
	Tl ⁺	1.75	Cond			15	H ₂ O (anion = NO ₃ ⁻)	635
	Tl ⁺	1.71	Cond			20	H ₂ O (anion = NO ₃ ⁻)	635
	Tl ⁺	1.68	Cond	-9.7	-0.13	25	H ₂ O (anion = NO ₃ ⁻)	632, 635
	Tl ⁺	1.66	Cond			30	H ₂ O (anion = NO ₃ ⁻)	635
	Tl ⁺	1.65	Cond			32	H ₂ O (anion = NO ₃ ⁻)	635
	Tl ⁺	4.37	Cal	-39.1	-47.7	25	MeOH	331
	Pb ²⁺	3.29	ISE			15	H ₂ O (anion = NO ₃ ⁻)	635
	Pb ²⁺	3.22	ISE			20	H ₂ O (anion = NO ₃ ⁻)	635
	Pb ²⁺	3.19	ISE	-17.0	4.0	25	H ₂ O (anion = NO ₃ ⁻)	632, 635
	Pb ²⁺	3.14	ISE			30	H ₂ O (anion = NO ₃ ⁻)	635
	Pb ²⁺	3.08	ISE			35	H ₂ O (anion = NO ₃ ⁻)	635
	Pb ²⁺	5.49	Cal	-32.0	-2.11	25	MeOH	331
	NH ₄ ⁺	4.07	Cal	-18.5	16	25	MeCN (anion = SCN ⁻)	129
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.02	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.79	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺ guanidinium	6.70	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
	4-CH ₃ PhN ₂ ⁺	<1	Pot			25	MeOH (anion = SCN ⁻)	637
	4-CH ₃ PhN ₂ ⁺	2.32	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v/v) (anion = BF ₄ ⁻)	636
B18C6-2	Na ⁺	3.95	ISE			25	MeOH	634
	K ⁺	4.71	ISE			25	MeOH	634
B18C6-3	K ⁺	3.6	Pot			25	MeOH	366
B18C6-4	Na ⁺	4.15	ISE			25	MeOH	376
	K ⁺	4.97	ISE			25	MeOH	376
B18C6-5	Na ⁺	1.43	Pot			25	H ₂ O	638
	K ⁺	2.04	Pot			25	H ₂ O	638
	Cs ⁺	~1.30	Pot			25	H ₂ O	638
B18C6-6	K ⁺	1.83	Pot			20	H ₂ O, 0.1 M Me ₄ NBr (L competes with [2.2.2]·1)	422
	Sr ²⁺	1.89	Pot			20	H ₂ O, 0.1 M Me ₄ NBr (L competes with A ₂ 18C6-4)	422
	Ba ²⁺	2.73	Pot			20	H ₂ O, 0.1 M Me ₄ NBr (L competes with A ₂ 18C6-4)	422
B18C6-7	Li ⁺	5.45	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639
	Na ⁺	5.58	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639
	K ⁺	7.11	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639
	Rb ⁺	6.45	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
B18C6-8	Cs ⁺	5.87	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639
	NH ₄ ⁺	6.30	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639
	Na ⁺	6.08	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	7.79	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	7.08	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Cs ⁺	6.42	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Mg ²⁺	5.41	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ca ²⁺	6.80	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Sr ²⁺	8.64	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ba ²⁺	7.64	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ag ⁺	5.81	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
B18C6-9	Tl ⁺	6.80	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Na ⁺	nm	UV Spec			25	MeOH (anion = Cl ⁻)	42
	Na ⁺	4.32	Fluor			25	MeOH (anion = Cl ⁻)	42
	Na ⁺	4.04	Fluor			25	MeOH (anion = SCN ⁻)	42
	Na ⁺	3.96	Fluor			25	THF (anion = ClO ₄ ⁻)	42
	Na ⁺	3.7	Fluor			25	ZLI-2806 (anion = SCN ⁻)	42
	K ⁺	4.80	UV Spec			25	MeOH (anion = Cl ⁻)	42
	K ⁺	4.91	Fluor			25	MeOH (anion = Cl ⁻)	42
	K ⁺	4.88	Fluor			25	MeOH (anion = SCN ⁻)	42
	K ⁺	4.08	Fluor			25	THF (anion = ClO ₄ ⁻)	42
	K ⁺	4.3	Fluor			25	ZLI-2806 (anion = SCN ⁻)	42
B18C6-10	Rb ⁺	4.36	UV Spec			25	MeOH (anion = Cl ⁻)	42
	Rb ⁺	4.31	Fluor			25	MeOH (anion = Cl ⁻)	42
	Cs ⁺	nm	UV Spec			25	MeOH (anion = Cl ⁻)	42
	Cs ⁺	3.88	Fluor			25	MeOH (anion = Cl ⁻)	42
	Na ⁺	4.35	Spec			25	MeOH	640
	K ⁺	5.35	Spec			25	MeOH	640
	Rb ⁺	4.47	Spec			25	MeOH	640
	PhCH ₂ NH ₃ ⁺	3.02	Spec			25	MeOH	640
	Na ⁺	4.17	ISE			25	MeOH	376
	K ⁺	4.95	ISE			25	MeOH	376
	B18C6-11	Na ⁺	4.15	ISE			25	MeOH
K ⁺		4.91	ISE			25	MeOH	376
B18C6-12	Na ⁺	4.15	ISE			25	MeOH	376
	K ⁺	4.91	ISE			25	MeOH	376
B18C6-13	Na ⁺	4.15	ISE			25	MeOH	376
	K ⁺	4.95	ISE			25	MeOH	376
B18C6-14	Na ⁺	4.15	ISE			25	MeOH	376
	K ⁺	4.93	ISE			25	MeOH	376
B18C6-15	Na ⁺	4.15	ISE			25	MeOH	376
	K ⁺	4.94	ISE			25	MeOH	376
B18C6-16	Na ⁺	3.92	ISE			25	MeOH	376
	K ⁺	4.76	ISE			25	MeOH	376
B18C6-17	Na ⁺	4.11	Spec			25	MeOH	640
	K ⁺	4.70	Spec			25	MeOH	640
	Rb ⁺	3.93	Spec			25	MeOH	640
B18C6-18	PhCH ₂ NH ₃ ⁺ cation-14 ^f	2.96	Spec			25	MeOH	640
	Na ⁺	1.5	CD			24	MeOH·H ₂ O (54:46 w/w)	641
B18C6-19	Na ⁺	4.26	ISE			25	MeOH	376
	K ⁺	5.15	ISE			25	MeOH	376
B18C6-19	Na ⁺	4.26	ISE			25	MeOH	376
B18C6-20	Na ⁺	4.50	Spec			25	MeOH	375
	K ⁺	5.58	Spec			25	MeOH (anion = SCN ⁻)	375
	NH ₄ ⁺	3.83	Spec			25	MeOH (anion = SCN ⁻)	375
	L-(H ₂ LeuOCH ₃) ^{†‡}	2.62	Spec			25	MeOH (anion = Cl ⁻)	375
	D-(H ₂ LeuOCH ₃) ^{†‡}	2.66	Spec			25	MeOH (anion = Cl ⁻)	375
	(H ₂ GlyOCH ₃) ^{†‡}	2.80	Spec			25	MeOH (anion = Cl ⁻)	375
	H ⁺	10.6	Spec			25	Diox·H ₂ O (1:9/v/v), 0.1 M LiCl	381
	H ⁺	10.58	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642
	Na ⁺	1.30	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642
	Na ⁺	1.00 (NaHL)	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642
B18C6-21	K ⁺	1.92	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642
	K ⁺	1.62 (KHL)	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642
Rb ⁺	1.52	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642	
Rb ⁺	1.20 (RbHL)	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642	
Cs ⁺	1.36	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642	
Cs ⁺	1.08 (CsHL)	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
B18C6-22	H ⁺	8.8	Spec			25	Diox·H ₂ O (1:9/v/v), 0.1 M LiCl	381	
	H ⁺	8.79	Spec			25	Diox·H ₂ O (1:9/v/v), $I = 0.07-0.15$	642	
B18C6-23	H ⁺	7.30	Pot			25	Diox·H ₂ O (7:1/v/v)	208	
B18C6-24	Li ⁺	3.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Na ⁺	4.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	K ⁺	5.24	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Rb ⁺	4.78	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Cs ⁺	4.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	NH ₄ ⁺	4.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	CH ₃ NH ₃ ⁺	3.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	B18C6-25	Na ⁺ ,4-NO ₂ PhO ⁻	2.20	Spec			25?	Me ₂ SO	644
	B18C6-26	Na ⁺ ,4-NO ₂ PhO ⁻	4.02	Spec			25?	Me ₂ SO	644
B18C6-27	Na ⁺	3.97	NMR			30	Me ₂ CO (anion = I ⁻)	645	
	Na ⁺	2.60	Cal	30.00	-49.20	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	646	
	K ⁺	3.43	Cal	-37.28	-57.28	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	846	
	Rb ⁺	2.93	Cal	-29.58	-41.51	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	646	
	Cs ⁺	2.56	Cal	-27.74	-42.47	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	846	
	Mg ²⁺	2.04	Cal	-21.59	-32.09	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	846	
	Ca ²⁺	1.92	Cal	-18.54	-24.31	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	846	
	Sr ²⁺	3.23	Cal	-37.11	-60.54	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	646	
	Ba ²⁺	3.90	Cal	-48.33	-84.68	30	70% MeOH (w/w), $I \sim 0$ (anion = Cl ⁻)	846	
	La ³⁺	12.49	Cal	-24.49	155.8	25	MeCN (anion = NO ₃ ⁻)	568	
	B18C6-28	Na ⁺	3.74	NMR			30	Me ₂ CO (anion = I ⁻)	645
		Na ⁺	3.76	Cond			25	MeOH	358
		K ⁺	4.39	Cond			25	MeOH	358
		Rb ⁺	3.90	Cond			25	MeOH	358
		Cs ⁺	3.38	Cond			25	MeOH	358
	B18C6-29	Ba ²⁺	2.50	Cal	28.95	-49.37	25	H ₂ O, $I \sim 0$ (anion = Cl ⁻)	647
		Na ⁺		Cal	-200.7(NaL)		25?	H ₂ O [Na(H ₂ O) _n ⁺ + L]	648
Na ⁺			Cal	-255.7					
Na ⁺			Cal	NaL(H ₂ O) ₂		25?	H ₂ O [Na(H ₂ O) _n ⁺ + L]	648	
Na ⁺		3.57	NMR			30	Me ₂ CO (anion = I ⁻)	645	
Na ⁺		2.51	Cal	-27.87	-44.01	30	70% MeOH (w/w), $I \sim 0$	649	
Na ⁺		3.53	Cond			25	MeOH	358	
K ⁺			Cal	-257.7(KL)		25?	H ₂ O [K(H ₂ O) _n ⁺ + L]	648	
K ⁺			Cal	-343.5					
K ⁺			Cal	[KL(H ₂ O) ₂]		25?	H ₂ O [K(H ₂ O) _n ⁺ + L]	648	
K ⁺		3.04	Cal	-31.97	-47.29	30	70% MeOH (w/w), $I \sim 0$	649	
K ⁺		3.91	Cond			25	MeOH	358	
Rb ⁺		2.45	Cal	-27.59	-44.09	30	70% MeOH (w/w), $I \sim 0$	649	
Rb ⁺		3.37	Cond			25	MeOH	358	
Cs ⁺			Cal	-153.4(CsL)		25?	H ₂ O [Cs(H ₂ O) _n ⁺ + L]	648	
Cs ⁺		Cal	-234.5						
Cs ⁺		Cal	[CsL(H ₂ O) ₂]		25?	H ₂ O [Cs(H ₂ O) _n ⁺ + L]	648		
Cs ⁺	2.34	Cal	-25.69	-39.98	30	MeOH·H ₂ O (7:1/w:w), $I \sim 0$	649		
Cs ⁺	2.99	Cond			25	MeOH	358		
Mg ²⁺	2.14	Cal	-16.40	-13.16	30	MeOH·H ₂ O (7:1/w:w), $I \sim 0$	649		
Ca ²⁺	2.03	Cal	-11.30	1.58	30	MeOH·H ₂ O (7:1/w:w), $I \sim 0$	649		
Sr ²⁺	3.03	Cal	-35.98	-60.73	30	MeOH·H ₂ O (7:1/w:w), $I \sim 0$	649		
Ba ⁺	3.57	Cal	-40.07	-63.65	30	MeOH·H ₂ O (7:1/w:w), $I \sim 0$	649		
B18C6-30	Li ⁺	4.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Na ⁺	4.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	K ⁺	6.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Rb ⁺	6.09	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Cs ⁺	5.13	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	NH ₄ ⁺	5.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	CH ₃ NH ₃ ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	B18C6-31	Li ⁺	3.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Na ⁺	4.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	K ⁺	5.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Rb ⁺	4.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	Cs ⁺	4.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	NH ₄ ⁺	4.63	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	CH ₃ NH ₃ ⁺	3.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643	
B18C6-32	Na ⁺	3.76	Spec			30	MeOH	650	
	K ⁺	4.4.59	Spec			30	MeOH	650	
	Rb ⁺	3.53	Spec			30	MeOH	650	
	Cs ⁺	3.82	Spec			30	MeOH	650	
Chart XXXI									
B ₂ 18C6-1	H ⁺	3.73	Cal	-19.8	4.7	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93	
	Li ⁺	0.35	Spec			25	CH ₂ Cl ₂ + 2% MeCN (anion = picrate)	264	
	Li ⁺	<1.9	Polg			25	MeOH-C ₆ H ₆ (8:2/ v:v), 0.025 M Bu ₄ NClO ₄	519	
	Li ⁺	4.5	Solv Extr- Rad + Cal			25	H ₂ O sat'd NBnz (anion = picrate)	651	
	Li ⁺	4.06	Cond			25	THF·CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174	
	Na ⁺	5.11	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622	
	Na ⁺	5.20	Cond			20	CHCl ₃ (anion = picrate)	652	
	Na ⁺	5.23	Spec			25	CH ₂ Cl ₂ + 2% MeCN (anion = picrate)	264	
	Na ⁺	2.8	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296	
	Na ⁺	2.7	Polg			25?	DMF, 0.05 M Et ₄ NI	296	
	Na ⁺	3.5	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296	
	Na ⁺	3.4	Polg			25?	DMF, 0.05 M Bu ₄ NI	296	
	Na ⁺	2.87	Pot			25	DMF	528	
	Na ⁺	2.72	Spec			25	DMF (anion = SCN ⁻)	653	
	Na ⁺	5.06	Kin			40	DMF [step 2+3: Na ⁺ ...L = (NaL) ⁺] ^e	529	
	Na ⁺	4.89	Polg	-15.0(Cal)	43.0	25	EtOH, 0.025 M Bu ₄ NI	297	
	Na ⁺	5.0	ISE			25	MeCN, 0.05 M Et ₄ NClO ₄	298	
	Na ⁺	3.9	Kin			25?	MeCN (anion = BPh ₄ ⁻)	654	
	Na ⁺	3.9	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296	
	Na ⁺	4.1	Polg			25?	MeCN, 0.05 M Et ₄ NI	296	
	Na ⁺	4.0	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296	
	Na ⁺	3.9	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296	
	Na ⁺	4.50	Polg			25	MeOH-C ₆ H ₆ (8:2/v/v), 0.025 M Bu ₄ NClO ₄	519	
	Na ⁺	4.37	Cond			25	MeOH	373	
	Na ⁺	4.18	ISE			26	MeOH, 0.1 M Me ₄ NCl	540	
	Na ⁺	7.1	Solv Extr- Rad + Cal			25	H ₂ O sat'd NBnz (anion = picrate)	651	
	Na ⁺	6.3	Solv Extr- CyVolt	-38.9	-9.7	25	NBnz, 0.017 M tetrabutylammonium dicarbollylcobaltate	655	
	Na ⁺	6.78	Solv Extr- CyVolt			?	NBnz	544	
	Na ⁺	5.03	Pot			25	PC, 0.1 M Et ₄ NClO ₄	545	
	Na ⁺	5.60	Cond			25	THF·CHCl ₃ (4:1/v:v) (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174	
	K ⁺	4.03	Solv Extr-UV			25?	Acetophenone (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	3.63	Solv Extr-UV			25?	Adiponitrile (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	3.18	Solv Extr-UV			25?	<i>t</i> -Amyl Alcohol (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	3.49	Solv Extr-UV			25?	Benzyl Alcohol (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	7.55	Solv Extr-UV (Pic Anal)			20	CDCl ₃ (anion = picrate)	619	
	K ⁺	7.72	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	622	
	K ⁺	~6.65	Cond			20	CHCl ₃ (anion = picrate)	652	
	K ⁺	7.46	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615	
	K ⁺	5.63	Spec			25	CH ₂ Cl ₂ + 2% MeCN (anion = picrate)	264	
	K ⁺	2.71	Solv Extr-UV			25?	Cyclohexanol (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	3.24	Solv Extr-UV			25?	Cyclohexanone (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	2.33	Solv Extr-UV			25?	1,4-Dioxaspiro[4,5]decane (anion = 4·NO ₂ PhO ⁻)	551	
	K ⁺	2.5	Polg			25?	DMF, 0.05 M Et ₄ NClO ₄	296	
	K ⁺	2.5	Polg			25?	DMF, 0.05 M Et ₄ NI	296	
	K ⁺	3.0	Polg			25?	DMF, 0.05 M Bu ₄ NClO ₄	296	
	K ⁺	3.1	Polg			25?	DMF, 0.05 M Bu ₄ NI	296	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	3.14	Spec			25	DMF (anion = SCN ⁻)	653
	K ⁺	-5.86	Kin			40	DMF [step 2+3: K ⁺ ...L = (KL) ⁺] ^e	529
	K ⁺	5.91	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	K ⁺	4.07	Solv Extr-UV			25?	Isobutyronitrile	
							(anion = 4·NO ₂ PhO ⁻)	551
	K ⁺	4.78	ISE	-18.6(Cal)	28.9	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	K ⁺	4.2	Polg			25?	MeCN, 0.05 M Et ₄ NClO ₄	296
	K ⁺	4.6	Polg			25?	MeCN, 0.05 M Et ₄ NI	296
	K ⁺	4.5	Polg			25?	MeCN, 0.05 M Bu ₄ NClO ₄	296
	K ⁺	4.4	Polg			25?	MeCN, 0.05 M Bu ₄ NI	296
	K ⁺	4.62	NMR	-28.6	-7.53	35	MeCN (anion = SCN ⁻)	656
	K ⁺	4.25	NMR	20.3	93.3	35	Me ₂ CO (anion = SCN ⁻)	656
	K ⁺	5.05	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	5.00	Cond			25	MeOH	373
	K ⁺	5.0	ISE			25	MeOH	598
	K ⁺	4.8	Pot			25	MeOH	366
	K ⁺	2.59	NMR	-16.9	-7.24	35	Me ₂ SO (anion = SCN ⁻)	656
	K ⁺	6.9	Solv Extr- Rad + Cal			25	H ₂ O sat'd NBnz (anion = picrate)	651
	K ⁺	4.33	NMR	-8.16	55.2	35	NBnz (anion = SCN ⁻)	656
	K ⁺	6.90	Solv Extr- CyVolt			?	NBnz	
								544
	K ⁺	2.51	NMR?	-54	-113	90	<i>n</i> -OctOH (values corrected for solvation)	657
	K ⁺	2.86	Solv Extr-UV			25?	Phenylacetonitrile	
							(anion = 4·NO ₂ PhO ⁻)	551
	K ⁺	3.64	Solv Extr-UV			25?	2-Phenylethanol	
							(anion = 4·NO ₂ PhO ⁻)	551
	K ⁺	7.16	Cond			20	<i>i</i> -PrOH-H ₂ O·CHCl ₃ (6:2:2/v:v:v)	627
	K ⁺	3.18	NMR	0	60.7	35	Py (anion = SCN ⁻)	656
	K ⁺	6.05	NMR	-44.4	-32.7	35	Quinone (anion = SCN ⁻)	656
	K ⁺	2.60	Solv Extr-UV			25?	2-(Tetrahydrofurfuryloxy) tetrahydropyran	
							(anion = 4·NO ₂ PhO ⁻)	551
	K ⁺	4.66	Cond			25	THF·CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	Rb ⁺	6.12	Cond			20	CHCl ₃ (anion = picrate)	652
	Rb ⁺	2.65	Pot			25	DMF	528
	Rb ⁺	2.70	Spec			25	DMF (anion = SCN ⁻)	653
	Rb ⁺	3.70	Polg	-12.0(Cal)	30.2	25	MeCN, 0.05 M Bu ₄ NClO ₄	298,658(logK)
	Rb ⁺	3.70	Pot			25	MeCN	528
	Rb ⁺	3.90	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	4.36	Cal	-28.6	-12.5	25	MeOH	331
	Rb ⁺	4.58	Cond			25	MeOH	373
	Rb ⁺	2.07	Pot			25	Me ₂ SO	528
	Rb ⁺	5.8	Solv Extr- Rad + Cal			25	H ₂ O sat'd NBnz (anion = picrate)	651
	Rb ⁺	5.45	Solv Extr- CyVolt			?	NBnz	
								544
	Cs ⁺	1.2	NMR			25	DMAC	318
	Cs ⁺	1.48	NMR			25	DMF	318
	Cs ⁺	$K \sim 0$	NMR			25	Form	318
	Cs ⁺	3.59	ISE	-8.4(Cal)	40.3	25	MeCN	298,659(logK)
	Cs ⁺	3.60	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	3.66(1)	Cond			25	MeOH	373
	Cs ⁺	3.21(2)	Cond			25	MeOH	373
	Cs ⁺	3.2	Pot			25	MeOH	366
	Cs ⁺	4.9	Solv Extr- Rad + Cal			25	H ₂ O sat'd NBnz (anion = picrate)	651
	Cs ⁺	$K \sim 0$	NMR			25	NMF	318
	Cs ⁺	4.84 or 5.85	Cond			20	<i>i</i> -PrOH-H ₂ O·CHCl ₃ (6:2:2/v:v:v))	627
	Cs ⁺	3.3	Cond			25	THF·CHCl ₃ (4:1/v:v), (anion = 2,4-(NO ₂) ₂ PhO ⁻)	174
	Mg ²⁺	0.97	Spec			25	CH ₂ Cl ₂ + 2% MeCN (anion = picrate)	264
	Mg ²⁺	<2.0	Spec			25	DMF	368
	Mg ²⁺	2.33	Spec			25	MeOH	368
	Mg ²⁺	<2.0	Spec			25	Me ₂ SO	368
	Ca ²⁺	3.8	Solv Extr-Photometry (Ca ²⁺ Anal)			25?	CHCl ₃ (anion = CCl ₃ COO ⁻)	660
	Ca ²⁺	4.63	Spec			25	CH ₂ Cl ₂ + 2% MeCN (anion = picrate)	264
	Ca ²⁺	2.17	Cond	-123	-369	25	DMF (anion = I ⁻)	661(logK),662
	Ca ²⁺	1.52	Cond			35	DMF (anion = I ⁻)	662
	Ca ²⁺	1.08	Cond			40	DMF (anion = I ⁻)	662
	Ca ²⁺	2.02	Spec			25	DMF	368
	Ca ²⁺	4.2	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	4.6	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	2.30	Cond	-70.7	-192	25	MeCN (anion = I ⁻)	661(logK),662
	Ca ²⁺	1.93	Cond			35	MeCN (anion = I ⁻)	662
	Ca ²⁺	1.67	Cond			40	MeCN (anion = I ⁻)	662
	Ca ²⁺	2.83	Spec			25	MeOH	368
	Ca ²⁺	1.76	Cond	-105	-319	25	Me ₂ SO (anion = I ⁻)	661(logK),662

TABLE I (Continued)

ligand	cation	log <i>K</i> ^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^c	ref
	Ca ²⁺	<2.0	Spec			25	Me ₂ SO	368
	Ca ²⁺	1.13	Cond			35	Me ₂ SO (anion = I ⁻)	662
	Ca ²⁺	0.83	Cond			40	Me ₂ SO (anion = I ⁻)	662
	Sr ²⁺	2.37	Spec			25	DMF	368
	Sr ²⁺	3.16	Cond			25	DMF (anion = Br ⁻)	661(log <i>K</i>),662
	Sr ²⁺	3.08	Cond			25	DMF (anion = Cl ⁻)	661(log <i>K</i>),662
	Sr ²⁺	3.17	Cond			25	DMF (anion = I ⁻)	661(log <i>K</i>),662
	Sr ²⁺	3.15	Cond	-26.1	-27.1	35	DMF (anion = I ⁻)	662
	Sr ²⁺	2.92	Cond			40	DMF (anion = I ⁻)	662
	Sr ²⁺	3.36	Cond	-35.1	-53.6	25	MeCN (anion = I ⁻)	661(log <i>K</i>),662
	Sr ²⁺	3.18	Cond			35	MeCN (anion = I ⁻)	662
	Sr ²⁺	3.03	Cond			40	MeCN (anion = I ⁻)	662
	Sr ²⁺	4.85	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Sr ²⁺	3.45	Spec			25	MeOH	368
	Sr ²⁺	2.08	Spec			25	Me ₂ SO	368
	Sr ²⁺	2.83	Cond	-54.8	-130	25	Me ₂ SO (anion = I ⁻)	661(log <i>K</i>),662
	Sr ²⁺	2.52	Cond			35	Me ₂ SO (anion = I ⁻)	662
	Sr ²⁺	2.34	Cond			40	Me ₂ SO (anion = I ⁻)	662
	Ba ²⁺	3.25	Spec			25	DMF	368
	Ba ²⁺	3.38	Cond	-16.9	7.72	25	DMF (anion = I ⁻)	661(log <i>K</i>),662
	Ba ²⁺	3.28	Cond			35	DMF (anion = I ⁻)	662
	Ba ²⁺	3.23	Cond			40	DMF (anion = I ⁻)	662
	Ba ²⁺	>5	Cal	-24.4		25	MeCN	298
	Ba ²⁺	3.50	Cond	-12.7	24.1	25	MeCN (anion = I ⁻)	661(log <i>K</i>),662
	Ba ²⁺	3.40	Cond			35	MeCN (anion = I ⁻)	662
	Ba ²⁺	3.37	Cond			40	MeCN (anion = I ⁻)	662
	Ba ²⁺	4.70	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Ba ²⁺	4.40	Spec			25	MeOH	368
	Ba ²⁺	2.62	Spec			25	Me ₂ SO	368
	Ba ²⁺	3.20	Cond	-6.78	39.0	25	Me ₂ SO (anion = I ⁻)	661(log <i>K</i>),662
	Ba ²⁺	3.16	Cond			35	Me ₂ SO (anion = I ⁻)	662
	Ba ²⁺	3.14	Cond			40	Me ₂ SO (anion = I ⁻)	662
	Pr ³⁺ ,3Fod ⁻	1.20	NMR			27	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	581
	Pr ³⁺ ,3Fod ⁻	1.28(1)	NMR			28	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	582
	Pr ³⁺ ,3Fod ⁻	0.40(2)	NMR			28	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	582
	Pr ³⁺ ,3Fod ⁻	1.04	NMR			27	CD ₂ Cl ₂ (Fod = heptafluoro- dimethyloctanedionate)	581
	Nd ³⁺ ,3PTA ⁻	1.28	NMR			25?	CD ₂ Cl ₂ (PTA = pivaloyl- trifluoroacetate)	576
	Nd ³⁺	4.22	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280
	Eu ³⁺ ,3Fod ⁻	1.32	NMR			27	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	582
	Eu ³⁺ ,3Fod ⁻	1.40(1)	NMR			28	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	582
	Eu ³⁺ ,3Fod ⁻	0.48(2)	NMR			28	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	582
	Eu ³⁺ ,3Fod ⁻	1.32	NMR			27	CD ₂ Cl ₂ (Fod = heptafluoro- dimethyloctanedionate)	581, 663
	Tb ³⁺	<1.5	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Dy ³⁺	<1.7	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Ho ³⁺	<1.7	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Er ³⁺	<1.5	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Tm ³⁺	<1.6	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Yb ³⁺	<1.4	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Lu ³⁺	<1.4	Na ⁺ ISE			26	MeOH, 0.1 M Me ₄ NCl	540
	Co ²⁺ ,2TTA ⁻	2.90	Solv Extr. Rad			25?	CHCl ₃ (TTA = thenoyl- trifluoroacetate)	118
	Co ²⁺	2.40	Pot	-61.2(Cal)	-160	25	PC, 0.01 M Et ₄ NClO ₄	117
	Cu ²⁺	3.26	Pot	-94.0(Cal)	-253	25	PC, 0.01 M Et ₄ NClO ₄	117
	Ag ⁺	1.41	Pot			25	H ₂ O	215
	Ag ⁺	2.14	Pot			25	DMF	528
	Ag ⁺	nm	Cal/Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Hg ⁺	3.13	Polg			25?	MeCN, 0.025 M Bu ₄ NClO ₄	664
	Tl ⁺	6.22	Solv Extr.-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	615
	Tl ⁺	~0	NMR			25	HMPA	587
	Tl ⁺	1.96	Polg			23	DMF	586
	Tl ⁺	2.13	NMR			25	DMF	587
	Tl ⁺	4.11	Fluor			25?	MeCN	665
	Tl ⁺	>5	NMR			25	MeCN	587
	Tl ⁺	3.30	NMR			25?	Me ₂ CO	665
	Tl ⁺	3.39(1)	NMR			25	Me ₂ CO	587
	Tl ⁺	1.36(2)	NMR			25	Me ₂ CO	587
	Tl ⁺	3.38	Polg			23	MeOH	586
	Tl ⁺	3.63	Fluor			25?	MeOH	665
	Tl ⁺	~0	NMR			25	Me ₂ SO	587
	Tl ⁺	>5	NMR			25	NMe	587
	Tl ⁺	4.04	NMR			25	Sulfolane	587
	Pb ²⁺	1.89	Pot			25	H ₂ O	215
	Pb ²⁺	5.05	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Pb ²⁺	4.13	Cal			25	MeOH	666
	UO ₂ ²⁺	6.60	Spec			25	MeCN, 0.1 M Et ₄ NClO ₄	333

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	$T, ^\circ\text{C}$	conditions ^c	ref
	UO ₂ ²⁺	7.61	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280
	UO ₂ ²⁺	5.50	Pot			25	PC, 0.1 M Et ₄ NClO ₄	545
	UO ₂ ²⁺	5.51	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295,333,334
	NH ₄ ⁺	6.23	Solv Extr-UV (Pic Anal)			20-22	CDCl ₃ (anion = picrate)	
	NH ₄ ⁺	2.49	Polg			25?	MeCN, 0.1 M Bu ₄ NClO ₄	622
	NH ₄ ⁺ av	3.70(1)	Pot			25	MeCN, 0.01 M Et ₄ NClO ₄	667
	NH ₄ ⁺ av	4.99(2)	Pot			25	MeCN, 0.01 M Et ₄ NClO ₄	630
	NH ₄ ⁺	2.59	Polg			25?	PC, 0.1 M Bu ₄ NI	630
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.93	Solv Extr-UV (SCN-Anal)			0	CDCl ₃ (anion = SCN ⁻)	667
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.93	Solv Extr-UV (SCN-Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.08	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	388
	Ph(CH ₂) ₄ NH ₃ ⁺	2.88	NMR			40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v:v) (anion = picrate)	371
	Ph(CH ₂) ₆ NH ₃ ⁺	2.84	NMR			40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v:v) (anion = picrate)	668
	guanidinium	<1	Pot			25	MeOH (anion = SCN ⁻)	668
	PhN ₂ ⁺	2.12	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	637
	PhN ₂ ⁺	2.1	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	636
	4-CH ₃ PhN ₂ ⁺	2.16	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	592
	4-CH ₃ PhN ₂ ⁺	2.0	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	636
	4-CH ₃ OPhN ₂ ⁺	1.98	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	592
	4-CH ₃ OPhN ₂ ⁺	1.7	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	636
	4-C ₂ H ₅ O ₂ CPhN ₂ ⁺	2.48	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	592
	4-CO ₂ HPhN ₂ ⁺	2.1	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	636
	4-NO ₂ PhN ₂ ⁺	2.2	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	3-ClPhN ₂ ⁺	2.2	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	4-ClPhN ₂ ⁺	2.46	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	636
	4-ClPhN ₂ ⁺	2.27	Spec	7.5	18	20	CHCl ₃ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	636
	4-ClPhN ₂ ⁺	2.12	Spec			32	CHCl ₃ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	636
	4-ClPhN ₂ ⁺	2.02	Spec			45	CHCl ₃ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	636
	4-ClPhN ₂ ⁺	2.4	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1 v:v) (anion = BF ₄ ⁻)	592
	4-BrPhN ₂ ⁺	1.9	NMR			25?	MeCN- <i>d</i> ₃ /CDCl ₃ (1:1/v:v) (anion = BF ₄ ⁻)	592
	cation-1 ^f	4.21	Spec			25?	DCE	335
	cation-2 ^f	2.67	Spec			25?	DCE	335
	cation-3 ^f	1.06	Spec			25?	DCE	335
B ₂ 18C6-2	Na ⁺	4.33	Cond			25	MeOH	373
	K ⁺	4.96	Cond			25	MeOH	373
	Rb ⁺	4.53	Cond			25	MeOH	373
	Cs ⁺	3.62(1)	Cond			25	MeOH	373
	Cs ⁺	3.24(2)	Cond			25	MeOH	373
B ₂ 18C6-3	Na ⁺	4.25	Cond			25	MeOH	373
	K ⁺	4.88	Cond			25	MeOH	373
	Rb ⁺	4.49	Cond			25	MeOH	373
	Cs ⁺	3.51(1)	Cond			25	MeOH	373
	Cs ⁺	3.31(2)	Cond			25	MeOH	373
B ₂ 18C6-4	Na ⁺	4.22	Cond			25	MeOH	373
	K ⁺	4.86	Cond			25	MeOH	373
	Rb ⁺	4.44	Cond			25	MeOH	373
	Cs ⁺	3.48(1)	Cond			25	MeOH	373
	Cs ⁺	3.36(2)	Cond			25	MeOH	373
B ₂ 18C6-5	Na ⁺	5.08	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	Na ⁺	4.32	ISE			25	MeOH (anion = Cl ⁻)	669
	Na ⁺	3.30	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	670
	K ⁺	2.27	Cond			25	<i>n</i> -BuOH (anion = Cl ⁻)	670
	K ⁺	2.64	Cond			25	<i>n</i> -BuOH (anion = ClO ₄ ⁻)	670
	K ⁺	2.80	Cond			25	<i>n</i> -BuOH (anion = picrate)	670
	K ⁺	2.43	Cond			25	<i>n</i> -BuOH (anion = BPh ₄ ⁻)	670
	K ⁺	4.91	Cond			30	<i>t</i> -BuOH (anion = Cl ⁻)	670
	K ⁺	4.86	Cond			30	<i>t</i> -BuOH (anion = ClO ₄ ⁻)	670
	K ⁺	4.45	Cond			30	<i>t</i> -BuOH (anion = picrate)	670
	K ⁺	4.37	Cond			30	<i>t</i> -BuOH (anion = BPh ₄ ⁻)	670
	K ⁺	none	Cond			25	DMF (anion = Cl ⁻)	670
	K ⁺	none	Cond			25	DMF (anion = NO ₃ ⁻)	670
	K ⁺	3.24	Pot			25	DMF	528
	K ⁺	1.42	Cond			25	MeCN (anion = Cl ⁻)	670
	K ⁺	1.04	Cond			25	MeCN (anion = Br ⁻)	670
	K ⁺	none	Cond			25	MeCN (anion = ClO ₄ ⁻)	670
	K ⁺	1.21	Cond			25	MeCN (anion = picrate)	670
	K ⁺	1.72	Cond			25	MeCN (anion = NO ₃ ⁻)	670

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	none	Cond			25	MeCN (anion = BPh ₄ ⁻)	670
	K ⁺	4.98	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	K ⁺	2.62	Cond			25	Me ₂ CO (anion = Br ⁻)	670
	K ⁺	2.85	Cond			25	Me ₂ CO (anion = NO ₃ ⁻)	670
	K ⁺	0.79	Cond			25	MeOH (anion = ClO ₄ ⁻)	670
	K ⁺	1.29	Cond			25	MeOH (anion = picrate)	670
	K ⁺	1.38	Cond			25	MeOH (anion = BPh ₄ ⁻)	670
	K ⁺	0.60	Cond			25	MeOH (anion = Cl ⁻)	670
	K ⁺	5.06	ISE			25	MeOH (anion = Cl ⁻)	669
	K ⁺	3.42	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669
	K ⁺	none	Cond			25	PC (anion = Cl ⁻)	670
	K ⁺	none	Cond			25	PC (anion = NO ₃ ⁻)	670
	K ⁺	2.42	Cond			25	<i>i</i> -PrOH (anion = Cl ⁻)	670
	K ⁺	2.39	Cond			25	<i>i</i> -PrOH (anion = ClO ₄ ⁻)	670
	K ⁺	3.00	Cond			25	<i>i</i> -PrOH (anion = picrate)	670
	K ⁺	2.90	Cond			25	<i>i</i> -PrOH (anion = BPh ₄ ⁻)	670
	Rb ⁺	4.09	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	Rb ⁺	4.07	ISE			25	MeOH (anion = Cl ⁻)	669
	Rb ⁺	3.35	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669
	Cs ⁺	3.37	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	Cs ⁺	3.54(1)	ISE			25	MeOH (anion = Cl ⁻)	669
	Cs ⁺	2.88(2)	ISE			25	MeOH (anion = Cl ⁻)	669
	Cs ⁺	3.31	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669
	La ³⁺	5.22	Calc'd			25?	PC (anhydrous)	111
	Gd ³⁺	3.86	Calc'd			25?	PC (anhydrous)	111
	Lu ³⁺	2.52	Calc'd			25?	PC (anhydrous)	111
	Ag ⁺	4.73	Pot			25	Me ₂ CO	528
	Ag ⁺	4.16	Pot			25	<i>n</i> -BuOH	528
	Ag ⁺	2.51	Pot			25	DMF	528
	Ag ⁺	4.14	Pot			25	MeOH	528
	Ag ⁺	5.8	Pot			25	PC	528
	Ag ⁺	~3.08	Pot			25	<i>i</i> -PrOH	528
B ₂ 18C6-6	Na ⁺	4.19	Cond			25	MeOH	373
	K ⁺	4.83	Cond			25	MeOH	373
	Rb ⁺	4.41	Cond			25	MeOH	373
	Cs ⁺	3.45(1)	Cond			25	MeOH	373
	Cs ⁺	3.40(2)	Cond			25	MeOH	373
B ₂ 18C6-7	Na ⁺	4.12	Cond			25	MeOH	373
	K ⁺	3.46(2)	Cond			25	MeOH	373
	Rb ⁺	3.46(2)	Cond			25	MeOH	373
	Cs ⁺	3.38(1)	Cond			25	MeOH	373
	Cs ⁺	3.37(2)	Cond			25	MeOH	373
B ₂ 18C6-8	Na ⁺	4.09	Cond			25	MeOH	373
	K ⁺	3.71(2)	Cond			25	MeOH	373
	Rb ⁺	3.56(2)	Cond			25	MeOH	373
	Cs ⁺	3.35(1)	Cond			25	MeOH	373
	Cs ⁺	3.31(2)	Cond			25	MeOH	373
B ₂ 18C6-9	Na ⁺	4.05	Cond			25	MeOH	373
	K ⁺	3.79(2)	Cond			25	MeOH	373
	Rb ⁺	3.65(2)	Cond			25	MeOH	373
	Cs ⁺	3.30(1)	Cond			25	MeOH	373
	Cs ⁺	3.24(2)	Cond			25	MeOH	373
B ₂ 18C6-10	Ca ²⁺	6.83	Cond			25?	EtOH	671
B ₂ 18C6-11	Ca ²⁺	6.89	Cond			25?	EtOH	671
B ₂ 18C6-12	Ca ²⁺	6.87	Cond			25?	EtOH	671
B ₂ 18C6-13	Ca ²⁺	6.74	Cond			25?	EtOH	671
B ₂ 18C6-14	Ca ²⁺	6.69	Cond			25?	EtOH	671
B ₂ 18C6-15	Ca ²⁺	5.36	Cond			25?	EtOH	671
B ₂ 18C6-16	Ca ²⁺	6.53;6.74	Cond			25?	EtOH	671
B ₂ 18C6-17	K ⁺	4.0	Pot			25	MeOH	366
	Rb ⁺	3.50(1)	Pot			25	MeOH	366
	Rb ⁺	1.9(2)	Pot			25	MeOH	366
	Cs ⁺	2.94(1)	Pot			25	MeOH	366
	Cs ⁺	3.05(2)	Pot			25	MeOH	366
B ₂ 18C6-18	K ⁺	4.4	Pot			25	MeOH	366
	Rb ⁺	3.28(1)	Pot			25	MeOH	366
	Rb ⁺	1.72(2)	Pot			25	MeOH	366
	Cs ⁺	2.63(1)	Pot			25	MeOH	366
	Cs ⁺	2.57(2)	Pot			25	MeOH	366
B ₂ 18C6-19	K ⁺	4.2	Pot			25	MeOH	366
	Rb ⁺	3.24(1)	Pot			25	MeOH	366
	Rb ⁺	1.76(2)	Pot			25	MeOH	366
	Cs ⁺	2.47(1)	Pot			25	MeOH	366
	Cs ⁺	3.03(2)	Pot			25	MeOH	366
B ₂ 18C6-20	Na ⁺	1.98	Spec			25	DMF (anion = SCN ⁻)	653
	K ⁺	2.22	Spec			25	DMF (anion = SCN ⁻)	653
	Rb ⁺	1.88	Spec			25	DMF (anion = SCN ⁻)	653
B ₂ 18C6-21	Na ⁺	2.79	Spec			25	DMF (anion = SCN ⁻)	653
	K ⁺	3.35	Spec			25	DMF (anion = SCN ⁻)	653
	Rb ⁺	2.61	Spec			25	DMF (anion = SCN ⁻)	653
B ₂ 18C6-23	Na ⁺	4.21	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	Na ⁺	2.20	ISE			25	MeOH (anion = Cl ⁻)	669
	Na ⁺	3.16	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669
	K ⁺	4.04	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	K ⁺	3.20	ISE			25	MeOH (anion = Cl ⁻)	669
	K ⁺	3.32	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669
	Rb ⁺	4.10	Cond			25	MeCN (anion = BPh ₄ ⁻)	669
	Rb ⁺	3.23	ISE			25	MeOH (anion = Cl ⁻)	669

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
B ₂ 18C6-24	Rb ⁺	3.30	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669	
	Cs ⁺	3.43	Cond			25	MeCN (anion = BPh ₄ ⁻)	669	
	Cs ⁺	3.17	ISE			25	MeOH (anion = Cl ⁻)	669	
	Cs ⁺	3.13	Cond			25	Me ₂ SO (anion = ClO ₄ ⁻)	669	
	Li ⁺	3.09	Cond			25	EtOH·CHCl ₃ (1:1), (anion = Cl ⁻)	672	
	Na ⁺	3.86	Cond			25	EtOH·CHCl ₃ (1:1), (anion = Cl ⁻)	672	
B ₂ 18C6-25	K ⁺	3.95	Cond			25	EtOH·CHCl ₃ (1:1), (anion = Cl ⁻)	672	
	Cs ⁺	3.47	Cond			25	EtOH·CHCl ₃ (1:1), (anion = Cl ⁻)	672	
B ₂ 18C6-1	Na ⁺	4.81	Cond			25	MeCN	673	
	K ⁺	4.74	Cond			25	MeCN	673	
B ₃ 18C6-1	H ⁺	4.08	Cal	-18.7	15.1	25	MeCN	629	
B ₄ 18C6-1	H ⁺	3.69	Cal	-15.5	18.5	25	MeCN	629	
(2,3-Nap)18C6-1	Li ⁺	4.34	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Li ⁺	4.35	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269, 498	
	Na ⁺	6.09	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	269, 498	
	Na ⁺	6.15	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	K ⁺	7.93	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	269, 498	
	K ⁺	7.62	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Rb ⁺	7.05	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	269, 498	
	Rb ⁺	7.66	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Cs ⁺	6.10	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	269, 498	
	Cs ⁺	6.47	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	NH ₄ ⁺	6.99	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	269, 498	
	NH ₄ ⁺	7.10	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	CH ₃ NH ₃ ⁺	5.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.02	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.64	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	4-CH ₃ PhN ₂ ⁺	1.44	Spec			20	CH ₂ Cl ₂ -MeCN (9:1/v:v) (anion = BF ₄ ⁻)	636	
(2,3-Nap)18C6-2	Li ⁺	4.48	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	5.94	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	6.62	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Rb ⁺	6.04	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Cs ⁺	5.99	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	NH ₄ ⁺	5.45	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
(2,3-Nap)18C6-3	Li ⁺	3.38	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	4.28	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	4.86	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Rb ⁺	4.46	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Cs ⁺	4.15	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	NH ₄ ⁺	4.15	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
Pyridono18C6-1	H ⁺	10.98(1)	Cal	-38.70	80.3	25	H ₂ O (L ⁻ + H ⁺)	675	
	H ⁺	3.10(2)	Cal	-4.14	45.5	25	H ₂ O (HL + H ⁺)	675	
Chart XXXII									
Py18C6-1	H ⁺	4.8	Pot			20	H ₂ O	136	
	H ⁺	4.95	Pot			25	H ₂ O	271	
	Li ⁺	4.58	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676	
	Li ⁺	3.01	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Na ⁺	6.07	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676	
	Na ⁺	4.09	Cal	-22.8	1.97	25	MeOH, <i>I</i> = 0.005	514, 623	
	Na ⁺	4.25	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	8.04	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676	
	K ⁺	5.35	Cal	-38.1	-25.4	25	MeOH, <i>I</i> = 0.005	514, 623	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	5.30	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	7.46	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	4.56	Cal	-36.5	-35.1	25	MeOH, I = 0.005	514, 623
	Rb ⁺	4.66	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	6.27	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	4.08	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ²⁺	>5.5	Cal	-32.3		25	MeOH, I = 0.005	514, 623
	Ba ⁺	>5.5	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ag ⁺	>5.5	Cal	-34.9		25	MeOH, I = 0.005	514, 623
	NH ₄ ⁺	7.79	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	3.52	Cal	-16.8	11	25	MeOH·H ₂ O (9:1/v:v)	205, 514
	CH ₃ NH ₃ ⁺	3.20	Cal	-24.3	-20	25	MeOH·H ₂ O (9:1/v:v)	205
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	8.27	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.76	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.95	Solv Extr-NMR (Cl ⁻ Anal)			0	CDCl ₃ (anion = Cl ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.09	Solv Extr-NMR (Cl ⁻ Anal)			24	CDCl ₃ (anion = Cl ⁻)	136
Py18C6-2	H ⁺	4.8	Pot			22	H ₂ O	512
	H ⁺	4.95	Pot			25	H ₂ O, 0.1 M HCl	385
	H ⁺	~4.95	Pot			25	H ₂ O	386
	H ⁺	~4.5	Pot			25	85.4 wt% EtOH·H ₂ O	386
	H ⁺	~4.9	Pot			25	51.2 wt% MeOH·H ₂ O	386
	H ⁺	~6.0	Pot			25	MeOH	386
Py18C6-3	Li ⁺	4.85	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Na ⁺	5.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	K ⁺	6.58	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	5.84	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	5.28	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	6.00	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
Py18C6-4	H ⁺	5.12	Pot			25	H ₂ O	271
K ₂ Py18C6-1	Li ⁺	4.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Na ⁺	5.49	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Na ⁺	4.24	Cal	-30.2	.20	25	MeOH	387
	Na ⁺	4.29	Cal	-25.9	-4.77	25	MeOH, I = 0.005	514, 623
	K ⁺	7.97	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	K ⁺	4.69	Cal	-39.0	.41	25	MeOH	387
	K ⁺	4.66	Cal	-38.9	.42.1	25	MeOH, I = 0.005	514, 623
	Rb ⁺	6.25	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Rb ⁺	4.43	Cal	-37.2	.40	25	MeOH	387
	Rb ⁺	4.24	Cal	-37.9	.46.3	25	MeOH, I = 0.005	514, 623
	Cs ⁺	5.37	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Cs ⁺	4.30	Cal	-33.6	.31	25	MeOH	387
	Mg ²⁺	4.74	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ca ²⁺	5.90	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Sr ²⁺	2.50	Cal	-11.1	10	25	MeOH	387
	Ba ²⁺	6.05	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ba ²⁺	4.34	Cal	-25.5	.3	25	MeOH	387
	Ba ²⁺	4.34	Cal	-25.2	-1.54	25	MeOH, I = 0.005	514, 623
	Ag ⁺	4.88	Cal	-32.8	-16.7	25	MeOH, I = 0.005	514, 623
	Ag ⁺	5.00	Pot	-38.1(Cal)	.32	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	NH ₄ ⁺	2.93	Cal	-32.4	-53.4	25	MeOH, I = 0.005	514, 623
	NH ₄ ⁺	6.57	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	1-(1-Nap)EtNH ₃ ⁺	3.35	NMR			25	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.73	NMR			9	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.62	NMR			15	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.33	NMR	-44.4	-84.5	25	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.10	NMR			35	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.18	NMR			15	CDCl ₃ /MeOD- <i>d</i> ₃ (1:9/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	2.99	NMR	-37.2	-68.2	25	CDCl ₃ /MeOD- <i>d</i> ₃ (1:9/v:v), (anion = ClO ₄ ⁻)	677

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
	α -PhEtNH ₃ ⁺	2.76	NMR			35	CDCl ₃ /MeOD- <i>d</i> ₃ (1:9/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	2.64	NMR			42	CDCl ₃ /MeOD- <i>d</i> ₃ (1:9/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	3.42	Cal	-30.5	-36.8	25	CHCl ₃ -MeOH (1:1/v:v), (anion = ClO ₄ ⁻)	677
	α -PhEtNH ₃ ⁺	2.96	Cal	-29.2	-41.3	25	CHCl ₃ -MeOH (1:9/v:v), (anion = ClO ₄ ⁻)	677
	(R)-PhEtNH ₃ ⁺	3.42	Cal	-33.2	-45.9	25	CDCl ₃ /MeOD (1:1/v:v), (anion = ClO ₄ ⁻)	677
	(R)-PhEtNH ₃ ⁺	3.33	NMR	-44.4	-84.5	25	CDCl ₃ /MeOD- <i>d</i> ₃ (1:1/v:v), (anion = ClO ₄ ⁻)	677
	(R)-PhEtNH ₃ ⁺	3.42	Cal	-30.5	-36.8	25	CHCl ₃ /MeOH (1:1/v:v), (anion = ClO ₄ ⁻)	677
K ₂ Py18C6-2	Li ⁺	nm	Cal			25	MeOH	678
	Na ⁺	4.14	Cal	-25.2	-5.34	25	MeOH	623, 678
	K ⁺	4.73	Cal	-33.3	-21.3	25	MeOH	623, 678
	Rb ⁺	3.56	Cal	-38.6	-61.4	25	MeOH	623, 678
	Mg ²⁺	nm	Cal			25	MeOH	678
	Ca ²⁺	nm	Cal			25	MeOH	678
	Ag ⁺	3.76	Cal	-33.6	-40.9	25	MeOH	623, 678
	NH ₄ ⁺	2.86	Cal	-28.4	-40.4	25	MeOH	623, 678
K ₂ Py18C6-3	H ⁺	~8.49(1)	Cal	18.66	-100.0	25	H ₂ O (L ⁻ + H ⁺)	675
	H ⁺	~1.70(2)	Cal	1.46	-27.7	25	H ₂ O (HL + H ⁺)	675
	H ⁺	9.83	Pot			25	Diox-H ₂ O (7:3/v:v)	208
K ₂ Py18C6-4	(R)-NapEtNH ₃ ⁺	2.08	NMR			25	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	677
	(S)-NapEtNH ₃ ⁺	2.40	NMR			25	MeOD- <i>d</i> ₃ (anion = ClO ₄ ⁻)	677
Py ₂ 18C6-1	H ⁺	5.3(1)	Pot			20	H ₂ O	136
	H ⁺	3.6(2)	Pot			20	H ₂ O	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.67	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.26	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.20	Solv Extr-NMR (Cl ⁻ Anal)			0	CDCl ₃ (anion = Cl ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.67	Solv Extr-NMR (Cl ⁻ Anal)			24	CDCl ₃ (anion = Cl ⁻)	136
Py ₂ 18C6-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.36	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	613
	PhCH ₂ NH ₃ ⁺	>7.30	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	613
Py ₃ 18C6-1	H ⁺	5.3(1)	Pot			20	H ₂ O	136
	H ⁺	3.7(2)	Pot			20	H ₂ O	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.71	Solv Extr-NMR (Cl ⁻ Anal)			0	CDCl ₃ (anion = Cl ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.98	Solv Extr-NMR (Cl ⁻ Anal)			24	CDCl ₃ (anion = Cl ⁻)	136
K ₂ Triazolo18C6-1	H ⁺	8.4(1)	Cal	-18.4		25?	H ₂ O	679
	H ⁺	2.4(2)	Cal	-0.84		25?	H ₂ O	679
Fur18C6-1	K ⁺	>6.70	Solv-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₂ C ₂ H ₄ ⁻)	206
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.09	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.32	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.11	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
K ₂ Fur18C6-1	NH ₄ ⁺	1.61	Cal	-26.8	-59.0	25	CHCl ₃ -MeOH (1:1/v:v)	514, 680
	CH ₃ NH ₃ ⁺	1.12	Cal	-29.3	-68.8	25	CHCl ₃ -MeOH (1:1/v:v)	514, 680
	PhCH ₂ NH ₃ ⁺	0.5	Cal			25	CHCl ₃ -MeOH (1:1/v:v)	514, 680
(Fur) ₂ 18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.30	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.41	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
(Fur) ₂ 18C6-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.16	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.14	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
(Fur) ₃ 18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.04	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.01	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
THF18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.27	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	868
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.62	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
THF18C6-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.40	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.68	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
K ₂ THF18C6-1	Na ⁺	2.29	Cal	-18.4	-18.0	25	MeOH, <i>I</i> = 0.005	514
	K ⁺	2.79	Cal	-35.1	-64.6	25	MeOH, <i>I</i> = 0.005	514
	Sr ²⁺	1.75	Cal	~16.7	-22.5	25	MeOH, <i>I</i> = 0.005	514
(THF) ₂ 18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.67	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.14	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
(THF) ₃ 18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.52	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	$t\text{-C}_4\text{H}_9\text{NH}_3^+$	6.62	Solv Extr-NMR (SCN-Anal)			24	CDCl_3 (anion = SCN^-)	388
Chart XXXIII								
K ₂ Phen18C6-1	Li ⁺	4.92	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Na ⁺	6.45	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	K ⁺	7.49	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Rb ⁺	6.85	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Cs ⁺	6.48	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Mg ²⁺	4.70	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Ca ²⁺	7.59	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Ba ²⁺	6.36	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Cu ²⁺	5.97	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	Ag ⁺	7.19	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
	NH_4^+	7.02	Solv Extr-UV (Pic Anal)			25	CDCl_3 (anion = picrate)	429
A18C6-1	Na ⁺	2.69	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	2.15	NMR			30	Py/Py-d ₅ (1:1), 0.07-0.17 M NaClO_4	363
A18C6-2	Na ⁺	3.78	ISE			25	99% MeOH, 0.01 M Me_4NOH	124
	Na ⁺	3.93	ISE			25?	MeOH (anhydrous)	143
	NH_4^+	4.08	ISE			25?	MeOH (anhydrous)	143
A18C6-3	Na ⁺	3.50	ISE			25	MeOH (anhydrous)	681, 682
	K ⁺	4.92	ISE			25	MeOH (anhydrous)	681, 682
A18C6-4	Na ⁺	2.98	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 394
	K ⁺	4.17(1)	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 394
	K ⁺	3.21(2)	ISE			25	MeOH·H ₂ O (9:1/w:w)	394
	Cs ⁺	3.53	ISE			25	MeOH·H ₂ O (9:1/w:w)	394
A18C6-5	Na ⁺	3.59	ISE			25	MeOH	395, 396
	K ⁺	4.87	ISE			25	MeOH	395, 396
A18C6-6	H ⁺	9.0	Pot			25	MeOH·H ₂ O (9:1)	140
	Na ⁺	3.37	ISE			25	MeOH·H ₂ O (95:5)	140
	Na ⁺	2.9	ISE			25	MeOH·H ₂ O (9:1/v:v)	396
	Na ⁺	3.61	ISE			25	MeOH	396
	K ⁺	3.5	ISE			25	MeOH·H ₂ O (9:1/v:v)	396
	K ⁺	4.79	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	4.98	ISE			25	MeOH	396
	H ⁺	10.20	Pot			25	Diox·H ₂ O (7:3/v:v)	208
	Na ⁺	1.30	ISE			25	H ₂ O, 0.1 M Me_4NBr	404
	Na ⁺	3.41	ISE			25?	MeOH (anhydrous)	143
A18C6-10	Na ⁺	4.57	ISE			25?	MeOH (anhydrous)	143
A18C6-11	Na ⁺	4.31	ISE			25	99% MeOH, 0.01 M Me_4NOH	124
A18C6-12	Na ⁺	4.40	ISE			25	99% MeOH, 0.01 M Me_4NOH	144
A18C6-13	Na ⁺	4.19	ISE			25	99% MeOH, 0.01 M Me_4NOH	124
A18C6-14	K ⁺	5.07	ISE			25	MeOH	397
A18C6-15	Na ⁺	4.18	ISE			25	MeOH	397
	K ⁺	5.32	ISE			25	MeOH	397
A18C6-16	Na ⁺	3.57	ISE			25	MeOH	397
	K ⁺	5.22	ISE			25	MeOH	397
A18C6-17	Na ⁺	3.51	ISE			25	MeOH	397
	K ⁺	5.04	ISE			25	MeOH	397
A18C6-18	Na ⁺	4.19	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO_4^-)	304
	Na ⁺	4.58	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	4.33	ISE			25	MeOH (anhydrous)	310
	K ⁺	5.77	ISE			25	MeOH	391
	K ⁺	6.07	ISE			25	MeOH (anhydrous)	310
	Ca ²⁺	4.34	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO_4^-)	304
	NH_4^+	4.21	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	3.92	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO_4^-)	304
	Na ⁺	4.33	ISE			25?	MeOH (anhydrous)	143
	K ⁺	5.36	ISE			25	MeOH·H ₂ O (9:1/v:v), (anion = ClO_4^-)	304
A18C6-20	NH_4^+	4.75	ISE			25?	MeOH (anhydrous)	143
	Na ⁺	4.28	ISE			25?	MeOH (anhydrous)	143
	NH_4^+	4.56	ISE			25?	MeOH (anhydrous)	143
A18C6-21	Na ⁺	4.27	ISE			25?	MeOH (anhydrous)	143
	NH_4^+	4.40	ISE			25?	MeOH (anhydrous)	143
A18C6-22	Na ⁺	4.22	ISE			25?	MeOH (anhydrous)	143
	NH_4^+	4.04	ISE			25?	MeOH (anhydrous)	143
A18C6-23	Na ⁺	3.44	ISE			25?	MeOH (anhydrous)	143
	NH_4^+	3.58	ISE			25?	MeOH (anhydrous)	143
A18C6-24	Na ⁺	4.21	ISE			25	MeOH	395, 396
	K ⁺	5.73	ISE			25	MeOH	395, 396
A18C6-25	Na ⁺	4.27	ISE			25	MeOH	395, 396
	K ⁺	5.74	ISE			25	MeOH	395, 396

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
A18C6-26	Na ⁺	4.33	ISE			25	MeOH	395, 396	
	K ⁺	5.75	ISE			25	MeOH	395, 396	
A18C6-27	Na ⁺	3.4	ISE			25	MeOH-H ₂ O (9:1/v:v)	396	
	Na ⁺	4.23	ISE			25	MeOH	396	
	K ⁺	3.8	ISE			25	MeOH-H ₂ O (9:1/v:v)	396	
	K ⁺	5.62	ISE			25	MeOH	396	
A18C6-28	Na ⁺	3.4	ISE			25	MeOH-H ₂ O (9:1/v:v)	396	
	Na ⁺	4.27	ISE			25	MeOH	396	
	K ⁺	3.9	ISE			25	MeOH-H ₂ O (9:1/v:v)	396	
	K ⁺	5.70	ISE			25	MeOH	396	
A18C6-29	Na ⁺	3.48	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	K ⁺	4.78(1)	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	K ⁺	3.96(2)	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	Ca ⁺	3.82	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
A18C6-30	H ⁺	9.59(1)	Spec			25	H ₂ O, 0.1 M Me ₄ NCl	401	
	H ⁺	5.77(2)	Spec			25	H ₂ O, 0.1 M Me ₄ NCl	401	
A18C6-31	Na ⁺	4.67	ISE			25	MeOH (anhydrous)	681, 682	
	K ⁺	5.92	ISE			25	MeOH (anhydrous)	681, 682	
A18C6-32	Na ⁺	3.50	ISE			25	MeOH (anhydrous)	681, 682	
	K ⁺	4.53	ISE			25	MeOH (anhydrous)	681, 682	
A18C6-33	Na ⁺	4.04	ISE			25	MeOH (anhydrous)	681, 682	
	K ⁺	5.03	ISE			25	MeOH (anhydrous)	681, 682	
A18C6-34	Na ⁺	4.06	ISE			25	MeOH (anhydrous)	681, 682	
	K ⁺	5.10	ISE			25	MeOH (anhydrous)	681, 682	
A18C6-35	Na ⁺	4.56	ISE			25	MeOH (anhydrous)	310	
	K ⁺	5.75	ISE			25	MeOH (anhydrous)	310	
A18C6-36	Na ⁺	4.58	ISE			25	MeOH (anhydrous)	310	
	K ⁺	5.78	ISE			25	MeOH (anhydrous)	310	
A18C6-37	Na ⁺	2.07	ISE			25	MeOH (anhydrous)	310	
	K ⁺	1.78	ISE			25	MeOH (anhydrous)	310	
A18C6-38	Na ⁺ , 4-NO ₂ PhO ⁻	2.31	Spec			25?	Me ₂ SO	644	
A18C6-39	Na ⁺ , 4-NO ₂ PhO ⁻	2.19	Spec			25?	Me ₂ SO	644	
A18C6-40	K ⁺	5.02	ISE			25	MeOH	391	
A18C6-41	Na ⁺	5.18	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
	K ⁺	4.84	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
	NH ₄ ⁺	4.90	Solv Extr-UV (Pic Anal)			22	CDCl ₃ (anion = picrate)	389, 390	
B ₂ A18C6-1	H ⁺	10.83	Pot			25	Diox-H ₂ O (7:3/v:v)	208	
Chart XXXIV									
A ₂ 18C6-1	H ⁺	8.94(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl pH 7.55-9.29	683	
	H ⁺	7.81(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl pH 7.55-9.29	683	
	H ⁺	10.64(1)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405	
	H ⁺	9.14(2)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405	
	Li ⁺	~0.0	NMR			25?	DMF	684	
	Li ⁺	4.39	NMR			25?	MeCN	684	
	Li ⁺	2.13	NMR			25?	Me ₂ CO	684	
	Li ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406	
	Li ⁺	~0.0	NMR			25?	Me ₂ SO	684	
	Li ⁺	3.98	Pot			25	NMe	685	
	Li ⁺	>5	NMR			25?	NMe	684	
	Li ⁺	3.67	NMR			25?	PC	684	
	Li ⁺	3.59	Pot	-5.8(Cal)	49.0	25	PC, 0.05 M Et ₄ NClO ₄	293	
	Li ⁺	0.43	NMR			25?	Py	684	
	Li ⁺	~0.0	NMR			25?	Me ₄ Guan	684	
	Na ⁺	<2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686	
	Na ⁺	4.49	NMR			22	MeCN	532	
	Na ⁺	3.92	Cal	-3.6	62.8	25	MeCN	408	
	Na ⁺	4.45	Pot			25	MeCN	685	
	Na ⁺	3.71	NMR			22	Me ₂ CO	532	
	Na ⁺	3.8	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409	
	Na ⁺	1.96	NMR			25?	Me ₂ CO	684	
	Na ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406	
	Na ⁺	1.50	ISE			25	MeOH (anhydrous)	410, 687	
	Na ⁺	1.19	NMR			25?	Me ₂ SO	684	
	Na ⁺ , 4-NO ₂ PhO ⁻	2.72	Spec			25?	Me ₂ SO	644	
	Na ⁺	3.37	NMR			25?	NMe	684	
	Na ⁺	4.62	NMR			22	PC	532	
	Na ⁺	4.31	Pot	-13.1(Cal)	38.3	25	PC, 0.05 M Et ₄ NClO ₄	293	
	Na ⁺	2.07	NMR			30	Py/Py- <i>d</i> ₅ (1:1), 0.07-0.17 M NaClO ₄	363	
	Na ⁺	4.12	NMR			25?	Py	684	
	K ⁺	none	Cond			25	H ₂ O (anion = NO ₃ ⁻)	688	
	K ⁺	<2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686	
	K ⁺	4.35	NMR			22	MeCN	532	
	K ⁺	4.13	Cal	-15.3	27.5	25	MeCN	408	
	K ⁺	4.47	Cond			25	MeCN (anion = picrate)	689	
	K ⁺	3.86	NMR			22	Me ₂ CO	532	
	K ⁺	4.2	Cond			25	Me ₂ CO, (anion = BPh ₄ ⁻)	409	
	K ⁺	1.83	Cal	-4.7	19.1	25	MeOH	406	
	K ⁺	1.80	ISE			25	MeOH (anhydrous)	410, 687	
	K ⁺	4.31	NMR			22	PC	532	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	K ⁺	4.43	ISE	-21.9(Cal)	11.1	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	4.6	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	690
	Rb ⁺	3.32	Cal	-10.1	29.5	25	MeCN	408
	Rb ⁺	2.98	NMR			22	Me ₂ CO	532
	Rb ⁺	<1	Cal	<2		25	MeOH	406
	Rb ⁺	3.08	NMR			22	PC	532
	Rb ⁺	2.93	Pot	-7.8(Cal)	29.5	25	PC, 0.05 M Et ₄ NClO ₄	293
	Cs ⁺	0.4	NMR			25	DMAC	318
	Cs ⁺	0.61	NMR			25?	DMF	684
	Cs ⁺	0.61	NMR			25	DMF	318
	Cs ⁺	0.2	NMR			25	Form	318
	Cs ⁺	2.254	NMR			22	MeCN	532
	Cs ⁺	2.69	Cal	-6.0	31.2	25	MeCN	408
	Cs ⁺	2.26	NMR			25?	MeCN	684
	Cs ⁺	2.07	NMR			22	Me ₂ CO	532
	Cs ⁺	2.3	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409
	Cs ⁺	1.89	NMR			25?	Me ₂ CO	684
	Cs ⁺	none	Cal/Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Cs ⁺	0.0	NMR			25?	Me ₂ SO	684
	Cs ⁺	2.79	NMR			25?	NMe	684
	Cs ⁺	0.07	NMR			25	NMF	318
	Cs ⁺	1.945	NMR			22	PC	532
	Cs ⁺	nm	Cal			25	PC	293
	Cs ⁺	1.95	NMR			25?	PC	684
	Cs ⁺	2.62	NMR			25?	Py	684
	Cs ⁺	1.55	NMR			25?	Me ₄ Guan	684
	Cs ⁺	1.94	NMR			25?	TMO	684
	Mg ²⁺	<0	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Mg ²⁺	3.81	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 9.9-10.5	146
	Mg ²⁺	2.37	Spec			25	DMF	368
	Mg ²⁺	3.40	Spec			25	MeOH	368
	Mg ²⁺	2.06	Spec			25	Me ₂ SO	368
	Ca ²⁺	1.74	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Ca ²⁺	2.70	Spec			25	DMF	368
	Ca ²⁺	3.87	Cal	5.6	93	25	MeOH	412
	Ca ²⁺	3.81	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ca ²⁺	4.34	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 8.4-9.7	146
	Ca ²⁺	3.5	Pot	>-12.0(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Ca ²⁺	3.89	Spec			25	MeOH	368
	Ca ²⁺	2.35	Spec			25	Me ₂ SO	368
	Sr ²⁺	2.68	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
	Sr ²⁺	4.00	Spec			25	DMF	368
	Sr ²⁺	5.99	Cal	-9.0	25	25	MeOH	412
	Sr ²⁺	5.89	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Sr ²⁺	6.09	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 7.4-9.0	146
	Sr ²⁺	5.7	Pot	-11.3(Cal)	71.1	25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Sr ²⁺	4.75	Spec			25	MeOH	368
	Sr ²⁺	3.24	Spec			25	Me ₂ SO	368
	Ba ²⁺	4.25	Spec			25	DMF	368
	Ba ²⁺	>7	NMR			22	MeCN	532
	Ba ²⁺	>8	Pot	-54.7(Cal)		25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ba ²⁺	>7	NMR			22	Me ₂ CO	532
	Ba ²⁺	6.12	Cal	-10.0	83.2	25	MeOH, (anion = ClO ₄ ⁻)	414
	Ba ²⁺	6.12	Cal	-10.0	83	25	MeOH	412
	Ba ²⁺	5.87	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ , pH 7.9-8.7	146
	Ba ²⁺	5.9	Pot	-13.4(Cal)	67.8	25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Ba ²⁺	5.98	Spec			25	MeOH	368
	Ba ²⁺	3.45	Spec			25	Me ₂ SO	368
	Ba ²⁺	>7	NMR			22	PC	532
	La ³⁺ ,3AID ⁻	2.891	Cond			25?	90% H ₂ O-EtOH (AID = acetyldadionate)	693
	La ³⁺	9.6	Cal	-58.6	-11.3	25	MeCN (anion = NO ₃ ⁻)	321
	La ³⁺	2.9	Cal	13.0	99.2	25	MeCN (anion = Cl ⁻)	321
	La ³⁺	16.5	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Ce ³⁺ ,3AID ⁻	3.127	Cond			25?	90% H ₂ O-EtOH (AID = acetyldadionate)	693
	Ce ³⁺	none	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	683
	Ce ³⁺	10.8	Cal	-92.5	-103.8	25	MeCN (anion = NO ₃ ⁻)	321
	Pr ³⁺ ,3AID ⁻	3.241	Cond			25?	90% H ₂ O-EtOH (AID = acetyldadionate)	693
	Pr ³⁺	16.1	Pot	-130	-130	25	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.7	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.0	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	14.3	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Nd ³⁺ ,3AID ⁻	3.481	Cond			25?	90% H ₂ O-EtOH (AID = acetyldadionate)	693
	Nd ³⁺	none	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	683
	Sm ²⁺	<4.2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Sm ³⁺ ,3AID ⁻	2.146	Cond			25?	90% H ₂ O-EtOH (AID = acetyldadionate)	693
	Sm ³⁺	none	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	683
	Sm ³⁺	<2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Sm ³⁺	9.9	Pot	-105	-163	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Sm ³⁺	16.5	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Eu ²⁺	<5.3	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Eu ²⁺	5.0	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ³⁺ ,3AID ⁻	2.447	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Eu ³⁺	<2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Eu ³⁺	3.1	Cal	-22.2	-15.5	25	MeCN (anion = NO ₃ ⁻)	321
	Eu ³⁺	9.7	Pot	-109	-176	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ³⁺	16.5	Pot			25	PC, 0.1 M Et ₄ NClO ₄	
	Gd ³⁺ ,3AID ⁻	2.857	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Gd ³⁺	16.5	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Tb ³⁺ ,3AID ⁻	2.960	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Dy ³⁺ ,3AID ⁻	3.110	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Dy ³⁺	16.9	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Ho ³⁺ ,3AID ⁻	3.286	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Er ³⁺ ,3AID ⁻	2.939	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Er ³⁺	16.9	Pot	-155	-192	25	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	16.5	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	15.6	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	14.8	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Tm ³⁺ ,3AID ⁻	3.057	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Yb ²⁺	<6.8	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Yb ³⁺ ,3AID ⁻	2.972	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Yb ³⁺	<2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Yb ³⁺	>10.6	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Yb ³⁺	16.9	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Lu ³⁺ ,3AID ⁻	2.921	Cond			25?	90% H ₂ O·EtOH (AID = acetyldadionate)	693
	Co ²⁺	3.25	Pot			25	H ₂ O	215
	Co ²⁺	3.56	Cal	11.4	106	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Ni ²⁺	3.43	Pot			25	H ₂ O	215
	Ni ²⁺	3.90	Cal	24.7	157	25	MeOH, (anion = NO ₃ ⁻)	415
	Ni ²⁺	4.13	Pot	24.7(Cal)	157	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Cu ²⁺	7.59	Pot			25	H ₂ O	215
	Cu ²⁺	8.48	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Cu ²⁺	4.67 (Cu ₂ L)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Ag ⁺	7.6	Ag ₂ S-ISE			25	H ₂ O	121
	Ag ⁺	7.70	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	7.90	Pot			25	H ₂ O	215
	Ag ⁺	9.91	Pot			25	DMF	685
	Ag ⁺	9.9	Pot			25	DMF, 0.05 M Et ₄ NClO ₄	695
	Ag ⁺	6.58	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.05), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.28	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.1), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	5.95	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.2), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.05	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.3), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.22	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.5), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	6.66	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.7), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	7.26	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.9), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	7.76	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	7.93	ISE	-30.5(Cal)	49.0	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ag ⁺	7.8	Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	695
	Ag ⁺	7.6	Pot	-88	-142	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Ag ⁺	7.94	Pot			25	MeCN	685
	Ag ⁺	15.57	Pot			25	Me ₂ CO	685
	Ag ⁺	13.39	Pot			25	Me ₂ CO, 0.1 M Et ₄ NClO ₄	685
	Ag ⁺	10.02	Pot	-44.9(Cal)	40.3	25	MeOH, 0.05 M Et ₄ NClO ₄	418
	Ag ⁺	10.02	Pot	-51.4(Cal)	19.1	25	MeOH	696
	Ag ⁺	9.99	Pot			25	MeOH	685
	Ag ⁺	9.8	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	695
	Ag ⁺	7.39	Pot			25	Me ₂ SO	685
	Ag ⁺	7.3	Pot			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	695
	Ag ⁺	13.63	Pot			25	NMe	685
	Ag ⁺	13.30	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	685
	Ag ⁺	15.5	Pot			25	PC, 0.05 M Et ₄ NClO ₄	695
	Ag ⁺	15.9	Pot	-134	-146	25	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	15.6	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	14.8	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Zn ²⁺	4.31	Pot			25	H ₂ O	215
	Zn ²⁺	4.84	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Zn ²⁺	13.86 (ZnHL)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄ (Zn ²⁺ + H ⁺ + L)	405

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Cd ²⁺	5.25	Pot			25	H ₂ O	215
	Tl ⁺	0.96	NMR			25	H ₂ O	587
	Tl ⁺	3.55	NMR			25	DMF	587
	Tl ⁺	3.22	NMR			25?	DMF	684
	Tl ⁺	3.41	Pot			25	DMF	685
	Tl ⁺	>7	NMR			22	MeCN	532
	Tl ⁺	>5	NMR			25	MeCN	587
	Tl ⁺	>5	NMR			25?	MeCN	684
	Tl ⁺	6.82	Pot			25	MeCN	685
	Tl ⁺	>5.5	NMR			22	Me ₂ CO	532
	Tl ⁺	>5	NMR			25	Me ₂ CO	587
	Tl ⁺	>5	NMR			25?	Me ₂ CO	684
	Tl ⁺	6.81	Pot			25	Me ₂ CO	685
	Tl ⁺	3.06	Cal	-21.2	-43.0	25	MeOH	109
	Tl ⁺	3.54	Pot			25	MeOH	685
	Tl ⁺	2.39	NMR			25	Me ₂ SO	587
	Tl ⁺	2.13	NMR			25?	Me ₂ SO	684
	Tl ⁺	2.38	Pot			25	Me ₂ SO	685
	Tl ⁺	>5	NMR			25	NMe	587
	Tl ⁺	>5	NMR			25?	NMe	684
	Tl ⁺	7.54	Pot			25	NMe	685
	Tl ⁺	7.71	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	685
	Tl ⁺	7.05	Pot			25	PC	685
	Tl ⁺	>5	NMR			25?	Py	684
	Tl ⁺	>5	NMR			25	Sulfolane	587
	Pb ²⁺	6.90	Pot			25	H ₂ O	215
	Pb ²⁺	9.11	ISE	-29.1(Cal)	76	25	MeOH, 0.05 M Et ₄ NClO ₄	332,419(logK)
	Pb ²⁺	9.48	Pot	-29.1(Cal)	82.9	25	MeOH, 0.05 M Et ₄ NClO ₄	332,420(logK)
	UO ₂ ²⁺	10.87 Pot				25	H ₂ O, 0.1 M Me ₄ NCl	
							pH 3.96-4.98	683
	UO ₂ ²⁺	7.45(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295,333,334
	UO ₂ ²⁺	4.95(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295,333,334
	UO ₂ ²⁺	14.49	Spec			25	PC, 0.1 M Et ₄ NClO ₄	
		(UO ₂) ₂ L					(2UO ₂ ⁺ + L)	295,334
A ₂ 18C6-2	H ⁺	8.80(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	H ⁺	7.26(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	La ³⁺	6.62	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ce ³⁺	6.84	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Pr ³⁺	7.04	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Nd ³⁺	7.24	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Sm ³⁺	7.51	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Eu ³⁺	7.38	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Gd ³⁺	7.29	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tb ³⁺	7.23	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Dy ³⁺	7.15	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ho ³⁺	6.91	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Er ³⁺	6.70	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tm ³⁺	6.49	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Yb ³⁺	6.39	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Lu ³⁺	6.01	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ni ²⁺	5.38	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cu ²⁺	10.52	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Zn ²⁺	5.44	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cd ²⁺	7.82	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Pb ²⁺	10.42	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
A ₂ 18C6-3	H ⁺	9.01(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	H ⁺	7.79(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	La ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ce ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Pr ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Nd ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Sm ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Eu ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Gd ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tb ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Dy ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ho ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Er ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tm ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Yb ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Lu ³⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ni ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cu ²⁺	~7	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Zn ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cd ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Pb ²⁺	8.09	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
A ₂ 18C6-4	H ⁺	9.53(1)	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
	H ⁺	7.51(2)	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
	H ⁺	9.58(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	H ⁺	7.61(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	H ⁺	9.7(1)	Pot?			25?	H ₂ O	699
	H ⁺	7.6(2)	Pot?			25?	H ₂ O	699
	H ⁺	9.6(1)	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	H ⁺	7.2(2)	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Na ⁺	3.08	ISE			25	MeOH-H ₂ O, 0.1 M Me ₄ NBr	534
	Na ⁺	3.7	ISE			25	MeOH	411
	K ⁺	4.10	ISE			25	MeOH-H ₂ O, 0.1 M Me ₄ NBr	534
	K ⁺	5.3	ISE			25	MeOH	411

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ca ²⁺	2.4	Pot?			25?	H ₂ O	699
	Ca ²⁺	4.7	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Ca ²⁺	4.2	Pot	-15.6(Cal)	28.9	25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Sr ²⁺	4.43	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
	Sr ²⁺	4.2	Pot?			25?	H ₂ O	699
	Sr ²⁺	7.0	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Sr ²⁺	6.5	Pot	-25.0(Cal)	40.6	25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Ba ²⁺	3.92	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422
	Ba ²⁺	4.0	Pot?			25?	H ₂ O	699
	Ba ²⁺	6.9	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Ba ²⁺	6.9	Pot	-34.6(Cal)	15.8	25	MeOH, 0.05 M Et ₄ NClO ₄	692
	Co ²⁺	4.42	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Ni ²⁺	3.85	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Cu ²⁺	6.82	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Cu ²⁺	7.17						
		(CuHL)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Ag ⁺	7.27	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Zn ²⁺	3.77	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Cd ²⁺	4.38	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Hg ²⁺	15.38	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	Hg ²⁺	>20.3	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	700
	Pb ²⁺	8.39	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	698
	UO ₂ ²⁺	6.90(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	7.38(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	NH ₄ ⁺	3.26	Polg			25	DMF, 0.1 M Hex ₄ NClO ₄	701
	NH ₄ ⁺	3.32	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701
	CH ₃ NH ₃ ⁺	3.34	Na ⁺ ISE			25	MeOH-H ₂ O, 0.1 M Me ₄ NBr	534
	C ₂ H ₅ NH ₃ ⁺	3.18	Na ⁺ ISE			25	MeOH-H ₂ O, 0.1 M Me ₄ NBr	534
	Ph(CH ₂) ₂ NH ₃ ⁺	3.30	Na ⁺ ISE			25	MeOH-H ₂ O, 0.1 M Me ₄ NBr	534
	+H ₃ N(CH ₂) ₃ NH ₃ ⁺	2.95	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701
A ₂ 18C6-5	Na ⁺	2.86	ISE	-11.8	15.2	25	MeOH (anhydrous)	411,702,681
	K ⁺	3.77	ISE	-26.3	-16.0	25	MeOH (anhydrous)	411, 702
A ₂ 18C6-6	K ⁺	3.78	ISE			25	MeOH (anhydrous)	681, 682
	Na ⁺	2.84	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	3.82	ISE			25	MeOH (anhydrous)	410, 411
A ₂ 18C6-7	Ca ²⁺	2.86	ISE			25	MeOH (anhydrous)	411
	Na ⁺	2.89	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	3.78	ISE			25	MeOH (anhydrous)	410, 411
A ₂ 18C6-8	Na ⁺	2.95	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	3.70	ISE			25	MeOH (anhydrous)	410, 411
A ₂ 18C6-9	Na ⁺	3.02	Cal	-16.8	1.3	25	MeOH	406
	K ⁺	4.00	ISE	-31.5(Cal)	-29.5	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Rb ⁺	3.51	Cal	-34.4	-48.7	25	MeOH	406
	Cs ⁺	3.08	Cal	-21.7	-14.1	25	MeOH	406
	Ca ²⁺	2.51	Cal	-11.7	9	25	MeOH	412
	Ca ²⁺	2.80	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Sr ²⁺	5.44	Cal	-23.2	26	25	MeOH	412
	Sr ²⁺	5.37	Pot			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ba ²⁺	5.84	Cal	-32.9	1.01	25	MeOH, (anion = ClO ₄ ⁻)	412, 414
	Ba ²⁺	5.79	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	412, 414
	UO ₂ ²⁺	3.88(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	3.86(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	Co ²⁺	2.36	Cal	2.8	54.4	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Ni ²⁺	2.54	Cal	11.2	85.9	25	MeOH (anion = NO ₃ ⁻)	415
	Pb ²⁺	8.37	ISE	-73.5(Cal)	-87	25	MeOH, 0.05 M Et ₄ NClO ₄	419
	UO ₂ ²⁺	3.88(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	3.86(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
A ₂ 18C6-10	Na ⁺	2.99	ISE			25	MeOH	411
	K ⁺	3.80	ISE			25	MeOH	411
A ₂ 18C6-11	Na ⁺	3.00	ISE			25	MeOH	411
	Na ⁺	3.04	ISE	-14.9	8.28	25	MeOH (anhydrous)	539
	K ⁺	4.03	ISE			25	MeOH	411
	K ⁺	4.04	ISE	-30.7	-25.8	25	MeOH (anhydrous)	539
A ₂ 18C6-12	Ca ²⁺	2.84	ISE			25	MeOH	411
	Na ⁺	3.61	ISE	-20.8	-0.70	25	MeOH (anhydrous)	539
	Na ⁺	3.67						
		NaL(H ₂ O) ₃	ISE			25	MeOH	411
	K ⁺	4.99	ISE	-20.8	-0.70	25	MeOH (anhydrous)	539
	K ⁺	5.00	ISE			25	MeOH	411
A ₂ 18C6-13	Ca ²⁺	3.52	ISE			25	MeOH	411
	H ⁺	8.44(1)	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	H ⁺	6.88(2)	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Na ⁺	<1	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Na ⁺	4.87	ISE			25	MeOH	411, 687
	Na ⁺	4.83	ISE	-24.4	10.7	25	MeOH (anhydrous)	702
	K ⁺	<1	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	K ⁺	5.08	ISE			25	MeOH	411, 687
	K ⁺	5.07	ISE	-36.8	-26.5	25	MeOH (anhydrous)	702
	Ca ²⁺	3.7	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Ca ²⁺	6.02	ISE			25	MeOH	411, 687
	Sr ²⁺	4.3	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Ba ²⁺	5.3	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Cu ²⁺	6.6	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Cd ²⁺	7.1	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	UO ₂ ²⁺	7.08(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
	UO ₂ ²⁺	7.42(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333
A ₂ 18C6-14	Na ⁺	4.75	ISE			25	MeOH (anhydrous)	410, 411, 687
	Na ⁺	4.77	ISE	-30.3	-10.2	25	MeOH (anhydrous)	702

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A ₂ 18C6-15	K ⁺	5.46	ISE	-36.9	18.0	25	MeOH (anhydrous)	410, 411, 687
	K ⁺	5.52	ISE			25	MeOH (anhydrous)	702
	Ca ²⁺	4.48	ISE			25	MeOH	411, 687
	H ⁺	8.40(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	H ⁺	7.15(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Mg ²⁺	<0	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Ca ²⁺	3.59	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Sr ²⁺	4.05	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Ba ²⁺	4.65	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	La ³⁺	3.24	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Cu ²⁺	5.97	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Zn ²⁺	3.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Cd ²⁺	7.64	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
A ₂ 18C6-16	Pb ²⁺	8.57	Pot	25	H ₂ O, 0.1 M NaNO ₃	691		
	Na ⁺	<1.5	ISE	25	MeOH	411		
A ₂ 18C6-17	K ⁺	<1.5	ISE	25	MeOH	411		
	H ⁺	8.45(1)	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	H ⁺	7.80(2)	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	H ⁺	2.90(3)	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	H ⁺	9.04(1)	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	H ⁺	7.81(2)	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	H ⁺	2.08(3)	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	H ⁺	8.02(1)	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	H ⁺	7.89(2)	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	H ⁺	2.0(3)	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	H ⁺	<2(4)	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	Na ⁺	1.95	ISE	25	H ₂ O, 0.1 M Me ₄ NBr	404		
	K ⁺	3.91	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	704		
	K ⁺	~1.8	ISE	25	MeOH	687		
	Mg ²⁺	<2	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	Ca ²⁺	8.39	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Ca ²⁺	8.707	Pot	-34.7(Cal)	46.0	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425
	Ca ²⁺	8.57	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	Ca ²⁺	7.67	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	Sr ²⁺		Cal	-37.7	37.7	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425
	Sr ²⁺	8.29	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Sr ²⁺	8.57	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	Sr ²⁺	7.69	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	Ba ²⁺		Cal	-43.1	4.18	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425
	Ba ²⁺	7.63	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Ba ²⁺	8.46	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	Ba ²⁺	7.66	Pot	25	H ₂ O, 0.1 M KNO ₃	404		
	La ³⁺	12.47	Pot	25	H ₂ O, 0.1 M NaNO ₃	151		
	La ³⁺	12.21	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Ce ³⁺	12.23	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Pr ³⁺	12.22	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Nd ³⁺	12.21	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
	Sm ³⁺	12.12	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704		
Eu ³⁺	12.02	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Eu ³⁺	12.33	Solv Extr.	25	H ₂ O, 0.1 M Me ₄ NCl	427, 428			
		Rad			427, 428			
Gd ³⁺	11.93	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Tb ³⁺	11.70	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Dy ³⁺	11.57	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Ho ³⁺	11.18	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Er ³⁺	11.30	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Tm ³⁺	11.10	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Yb ³⁺	10.90	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Lu ³⁺	10.84	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	424, 704			
Th ⁴⁺	13.98	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	427			
Pu ⁴⁺	19.11	Solv Extr.	25	H ₂ O, 0.1 M Me ₄ NCl	427			
		Rad			427			
Am ³⁺	13.33	Solv Extr.	25	H ₂ O, 0.1 M Me ₄ NCl	427, 428			
		Rad			427, 428			
Am ³⁺	12.28	Solv Extr.	30	H ₂ O, 0.1 M Me ₄ NCl	705			
		Rad			705			
Am ³⁺	12.58	Solv Extr.	30	H ₂ O, 0.01 M Me ₄ NCl	705			
		Rad			705			
Cm ³⁺	11.85	Solv Extr.	30	H ₂ O, 0.1 M Me ₄ NCl	705			
		Rad			705			
Mn ²⁺	8.657	Pot	-6.69(Calc'd)	66.9	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Fe ²⁺	7.88	Pot	0.42(Calc'd)	151	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Co ²⁺	7.983	Pot	10.9(Cal)	188	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Co ²⁺	2.30							
	(Co ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Co ²⁺	7.00	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
Ni ²⁺	7.39	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 704	
Ni ²⁺	8.564	Pot	6.69(Cal)	188	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Ni ²⁺	1.94							
	(Ni ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Ni ²⁺	7.46	Pot			25	H ₂ O, 0.1 M KNO ₃	404	
Cu ²⁺	14.49	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 704	
Cu ²⁺	15.36	Pot	-24.3(Cal)	213	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Cu ²⁺	2.52							
	(Cu ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	425	
Cu ²⁺	14.94	Pot			25	H ₂ O, 0.1 M NaNO ₃	151	
Cu ²⁺	>14	Pot			25	H ₂ O, 0.1 M KNO ₃	404	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Zn ²⁺	8.42	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 704
	Zn ²⁺	8.96	Pot	7.11(Cal)	197	25	H ₂ O, 0.1 M Me ₄ NNO ₃	425
	Zn ²⁺	2.14						
	(Zn ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	425
	Zn ²⁺	8.91	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Zn ²⁺	8.03	Pot			25	H ₂ O, 0.1 M KNO ₃	404
	Cd ²⁺	11.07	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 704
	Cd ²⁺	12.82	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
	Pb ²⁺	13.55	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	424, 704
	Pb ²⁺	14.54	Pot			25	H ₂ O, 0.1 M NaNO ₃	151
A ₂ 18C6-18	K ⁺	1.8	ISE			25	MeOH	411
A ₂ 18C6-19	Na ⁺	5.51	ISE	-25.9	18.3	25	MeOH (anhydrous)	682
	K ⁺ 5.78		ISE			25	MeOH (anhydrous)	682
A ₂ 18C6-20	Na ⁺	5.51	ISE			25	MeOH	411, 687
	K ⁺	5.78	ISE			25	MeOH	411, 687
	Ca ²⁺	6.78	ISE			25	MeOH	411, 687
	Pb ²⁺	>8.7	ISE			17	H ₂ O	706
A ₂ 18C6-21	Na ⁺	2.69	ISE	-20.4	-16.8	25	MeOH (anhydrous)	539
	K ⁺	3.91	ISE	-39.9	-59.1	25	MeOH (anhydrous)	539
A ₂ 18C6-22	H ⁺	8.97(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	H ⁺	8.16(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	H ⁺	8.92(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	
	H ⁺	8.20(2)	Pot			25	(H ⁺ + L ²⁺)	707
	H ⁺	3.63(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	
	H ⁺	2.61(4)	Pot			25	(H ⁺ + HL ⁻)	707
	H ⁺					25	H ₂ O, 0.1 M KNO ₃	
	H ⁺					25	(H ⁺ + H ₂ L)	707
	H ⁺					25	H ₂ O, 0.1 M KNO ₃	
	H ⁺					25	(H ⁺ + H ₃ L ⁺)	707
	Na ⁺	none	ISE			25	H ₂ O, 0.1 M Me ₄ NBr	404
	Mg ²⁺	<2	Pot			25	H ₂ O, 0.1 M KNO ₃	
	Ca ²⁺	4.0	Pot			25	(Mg ²⁺ + L ²⁺)	707
	Sr ²⁺	4.4	Pot			25	H ₂ O, 0.1 M KNO ₃	
	Ba ²⁺	3.8	Pot			25	(Ca ²⁺ + L ²⁺)	707
	La ³⁺	6.18	Pot			25	H ₂ O, 0.1 M KNO ₃	
	Ce ³⁺	6.85	Pot			25	(Sr ²⁺ + L ²⁺)	707
	Pr ³⁺	7.16	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Nd ³⁺	7.40	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Sm ³⁺	7.44	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Eu ³⁺	7.38	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Gd ³⁺	7.02	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tb ³⁺	7.10	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Dy ³⁺	6.70	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ho ³⁺	6.47	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Er ³⁺	6.20	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Tm ³⁺	6.13	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Yb ³⁺	6.10	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Lu ³⁺	~6	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Ni ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cu ²⁺	8.18	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Zn ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Cd ²⁺	6.11	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
	Pb ²⁺	9.20	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	697
A ₂ 18C6-23	Na ⁺	4.4	Cond			25	H ₂ O, 0.1 M Me ₄ NCl	697
	K ⁺	>5.3	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409
	Cs ⁺	4.9	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409
A ₂ 18C6-24	Na ⁺	3.77	ISE	-19.2	7.44	25	Me ₂ CO (anion = BPh ₄ ⁻)	409
	K ⁺	3.75	ISE			25	MeOH (anhydrous)	682
A ₂ 18C6-25	Na ⁺	4.6	Cond			25	MeOH (anhydrous)	682
	K ⁺	>4.7	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409
	Cs ⁺	4.1	Cond			25	Me ₂ CO (anion = BPh ₄ ⁻)	409
A ₂ 18C6-26	H ⁺	8.03(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	H ⁺	6.92(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Ca ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Sr ²⁺	3.27	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Ba ²⁺	4.91	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Ni ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Cu ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Zn ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Cd ²⁺	3.30	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
	Pb ²⁺	7.21	Pot			25	H ₂ O, 0.1 M NaNO ₃	341a
A ₂ 18C6-27	Li ⁺	4.24	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	4.32	Pot	-36.7(Cal)	-40.9	25	PC, 0.05 M Et ₄ NClO ₄	293
	Na ⁺	2.68	ISE	-19.0	-11.5	25	MeOH (anhydrous)	539
	Na ⁺	2.68	ISE	-13.72	5.19	25	MeOH (anhydrous)	708
	Na ⁺	2.72	ISE			25	MeOH (anhydrous)	410, 411, 687
	Na ⁺	4.90	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	4.94	Pot	-39.8(Cal)	-39.3	25	PC, 0.05 M Et ₄ NClO ₄	293
	K ⁺	4.56	ISE	-45.3(Cal)	-65.1	25	PC, 0.05 M Et ₄ NClO ₄	293
	K ⁺	3.38	ISE			25	MeOH (anhydrous)	410, 411, 687
	Rb ⁺	3.69	Cal	-39.0	-60.4	25	PC	293
	Cs ⁺	3.63	Cal	-22.2	-5.4	25	PC	293
	Ca ²⁺	2.79	ISE			25	MeOH	411, 887
	Ag ⁺	5.86	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A ₂ 18C6-28	Na ⁺	2.40	ISE			25	MeOH	411, 687
	Na ⁺	2.30	ISE	-22.34	-31.03	25	MeOH (anhydrous)	708
	K ⁺	2.59	ISE			25	MeOH	411, 687
	Ca ²⁺	2.95	ISE			25	MeOH	411, 687
A ₂ 18C6-29	Li ⁺	5.11	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	5.93	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	3.65	ISE			25	MeOH (anhydrous)	410,411,687
	K ⁺	4.94	ISE			25	MeOH (anhydrous)	410,411,687
	Ca ²⁺	3.27	ISE			25	MeOH	411, 687
	Ag ⁺	6.20	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-30	Li ⁺	4.55	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	4.97	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	2.79	ISE	-12.64	11.09	25	MeOH (anhydrous)	708
A ₂ 18C6-31	Ag ⁺	6.30	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.92	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	4.65	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-32	Na ⁺	2.40	ISE	-13.97	-0.98	25	MeOH (anhydrous)	708
	Ag ⁺	5.08	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.02	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-33	Na ⁺	4.58	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Ag ⁺	3.57	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.23	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-34	Na ⁺	3.44	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Na ⁺	2.07	ISE	-16.36	-15.30	25	MeOH (anhydrous)	708
	Ag ⁺	4.15	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	<2	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-35	Na ⁺	3.18	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Ag ⁺	3.17	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Li ⁺	3.19	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
A ₂ 18C6-36	Na ⁺	3.34	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	Ag ⁺	4.10	Pot			25	MeCN, 0.05 M Bu ₄ NClO ₄	399
	H ⁺	9.8(1)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
A ₂ 18C6-37	H ⁺	6.56(2)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	H ⁺	4.03(3)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	H ⁺	10.9(1)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	H ⁺	9.00(2)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
A ₂ 18C6-38	H ⁺	5.52(3)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	H ⁺	10.3(1)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	H ⁺	8.72(2)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
A ₂ 18C6-39	H ⁺	5.01(3)	Spec			25	Diox-H ₂ O (9:1/v:v), 0.1 M Me ₄ NBr	709
	Na ⁺	3.77	ISE			25	MeOH (anhydrous)	410, 411
	K ⁺	4.98	ISE			25	MeOH (anhydrous)	410, 411
A ₂ 18C6-40	H ⁺	7.44(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	H ⁺	6.26(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	H ⁺	1.38(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Ca ²⁺	3.63	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Sr ²⁺	4.87	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Ba ²⁺	4.99	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	La ³⁺	3.53	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Ni ²⁺	8.80	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Cu ²⁺	13.55	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Zn ²⁺	6.96	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Cd ²⁺	10.96	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Pb ²⁺	11.67	Pot			25	H ₂ O, 0.1 M NaNO ₃	710
	Na ⁺	3.35	ISE	-5.82	46.8	25	MeOH (anhydrous)	681, 682
	K ⁺	3.32	ISE			25	MeOH (anhydrous)	681, 682
A ₂ 18C6-42	Na ⁺	4.36	ISE	-31.5	-21.5	25	MeOH (anhydrous)	681, 682
	K ⁺	4.21	ISE			25	MeOH (anhydrous)	681, 682
A ₂ 18C6-43	Na ⁺	4.26	ISE			25	MeOH (anhydrous)	681, 682
	K ⁺	4.17	ISE			25	MeOH (anhydrous)	681, 682
A ₂ 18C6-44	Na ⁺	4.16	ISE			25	MeOH (anhydrous)	681, 682
	K ⁺	4.09	ISE			25	MeOH (anhydrous)	681, 682
A ₂ 18C6-45	Na ⁺	4.18	ISE			25	MeOH (anhydrous)	681, 682
	K ⁺	4.11	ISE			25	MeOH (anhydrous)	681, 682
A ₂ 18C6-46	Na ⁺	1.30	ISE			25	H ₂ O, 0.1 M Me ₄ NBr	404
							(intervention of Na ₂ L)	
A ₂ 18C6-47	H ⁺	8.5(1)	Pot?			25?	H ₂ O	699
	H ⁺	7.1(2)	Pot?			25?	H ₂ O	699
	H ⁺	9.6(1)	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	H ⁺	7.3(2)	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Li ⁺	3.25	Cond			25	MeOH (anion = picrate)	689
	K ⁺	4.43	Cond			25	MeCN (anion = picrate)	689
	K ⁺	4.21	Cond			25	MeOH (anion = picrate)	689
	Ca ²⁺	<2	Pot?			25?	H ₂ O	699
	Ca ²⁺	3.9	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Sr ²⁺	2.2	Pot?			25?	H ₂ O	699
	Sr ²⁺	6.4	Pot?			25?	MeOH-H ₂ O (9:1/v:v)	699
	Ba ²⁺	2.6	NMR			25?	H ₂ O	699
	Ba ²⁺	2.2	Pot?			25?	H ₂ O	699

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A ₂ 18C6-48	Ba ²⁺	6.6	Pot?			25?	MeOH·H ₂ O (9:1/v:v)	699
	Ca ²⁺	none	Pot?			25?	H ₂ O	699
	Ca ²⁺	2.5	Pot?			25?	MeOH·H ₂ O (9:1/v:v)	699
	Sr ²⁺	4.1	Pot?			25?	MeOH·H ₂ O (9:1/v:v)	699
	Ba ²⁺	4.2	Pot?			25?	MeOH·H ₂ O (9:1/v:v)	699
A ₂ 18C6-49	Na ⁺	2.88	Solv Extr-NMR (ANS Anal)			30	o-C ₆ H ₄ Cl ₂ -n-BuOH (80:20/v:v) (ANS = 8-anilino-naphthalene-1-sulfonate)	711
	K ⁺	2.84	Solv Extr-NMR (ANS Anal)			30	o-C ₆ H ₄ Cl ₂ -n-BuOH (80:20/v:v) (ANS = 8-anilino-naphthalene-1-sulfonate)	711
	Rb ⁺	2.62	Solv Extr-NMR (ANS Anal)			30	o-C ₆ H ₄ Cl ₂ -n-BuOH (80:20/v:v) (ANS = 8-anilino-naphthalene-1-sulfonate)	711
	Cs ⁺	2.45	Solv Extr-NMR (ANS Anal)			30	o-C ₆ H ₄ Cl ₂ -n-BuOH (80:20/v:v) (ANS = 8-anilino-naphthalene-1-sulfonate)	711
A ₂ 18C6-51	Na ⁺ , 4-NO ₂ PhO ⁻	3.58	Spec			25?	Me ₂ SO	644
Chart XXXV								
A ₂ 18C6-52	Na ⁺	2.88	ISE			25	MeOH	411
A ₂ 18C6-53	H ⁺	9.37(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	H ⁺	8.49(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	H ⁺	3.18(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Na ⁺	none	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	K ⁺	2.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cs ⁺	3.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cs ⁺	12.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + H ⁺)	712
	Ca ²⁺	3.9	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ca ²⁺	12.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + H ⁺)	712
	Sr ²⁺	4.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Sr ²⁺	12.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + H ⁺)	712
	Ba ²⁺	4.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ba ²⁺	12.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + H ⁺)	712
	La ³⁺	5.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	La ³⁺	13.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (La ³⁺ + L + H ⁺)	712
	Ni ²⁺	4.9	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ni ²⁺	13.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ni ²⁺ + L + H ⁺)	712
	Cu ²⁺	9.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cu ²⁺	14.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cu ²⁺ + L + H ⁺)	712
	Zn ²⁺	5.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Zn ²⁺	13.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Zn ²⁺ + L + H ⁺)	712
	Cd ²⁺	7.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cd ²⁺	14.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cd ²⁺ + L + H ⁺)	712
	Tl ⁺	2.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Pb ²⁺	8.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Pb ²⁺	15.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Pb ²⁺ + L + H ⁺)	712
	A ₂ 18C6-54	H ⁺	10.63(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃
H ⁺		9.18(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
H ⁺		4.09(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
H ⁺		2.45(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Na ⁺		2.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
K ⁺		3.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Cs ⁺		3.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Cs ⁺		13.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + H ⁺)	712
Ca ²⁺		6.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Ca ²⁺		15.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + H ⁺)	712
Sr ²⁺		6.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Sr ²⁺		15.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + H ⁺)	712
Ba ²⁺		6.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Ba ²⁺		15.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + H ⁺)	712
La ³⁺		9.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
La ³⁺		17.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (La ³⁺ + L + H ⁺)	712
Ni ²⁺		6.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Ni ²⁺		15.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ni ²⁺ + L + H ⁺)	712
Cu ²⁺		11.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Cu ²⁺		18.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cu ²⁺ + L + H ⁺)	712
Zn ²⁺		7.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
Zn ²⁺		15.9	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Zn ²⁺ + L + H ⁺)	712
Cd ²⁺		10.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A ₂ 18C6-55	Cd ²⁺	17.1 (CdHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cd ²⁺ + L + H ⁺)	712
	Tl ⁺	3.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Tl ⁺	13.3 (TlHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Tl ⁺ + L + H ⁺)	712
	Pb ²⁺	12.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Pb ²⁺	18.4 (PbHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Pb ²⁺ + L + H ⁺)	712
	H ⁺	9.88(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	H ⁺	8.65(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	H ⁺	3.65(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Na ⁺	3.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Na ⁺	12.5 (NaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Na ⁺ + L + H ⁺)	712
	K ⁺	3.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	K ⁺	12.7 (KHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (K ⁺ + L + H ⁺)	712
	Cs ⁺	2.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cs ⁺	12.4 (CsHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cs ⁺ + L + H ⁺)	712
	Ca ²⁺	9.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ca ²⁺	16.7 (CaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ca ²⁺ + L + H ⁺)	712
	Sr ²⁺	10.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Sr ²⁺	17.3 (SrHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Sr ²⁺ + L + H ⁺)	712
	Ba ²⁺	10.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ba ²⁺	17.3 (BaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ba ²⁺ + L + H ⁺)	712
	La ³⁺	13.5	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	La ³⁺	19.4 (LaHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (La ³⁺ + L + H ⁺)	712
	Ni ²⁺	10.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Ni ²⁺	17.4 (NiHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Ni ²⁺ + L + H ⁺)	712
	Cu ²⁺	14.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cu ²⁺	20.2 (CuHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cu ²⁺ + L + H ⁺)	712
	Zn ²⁺	10.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Zn ²⁺	17.2 (ZnHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Zn ²⁺ + L + H ⁺)	712
	Cd ²⁺	12.9	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Cd ²⁺	18.5 (CdHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Cd ²⁺ + L + H ⁺)	712
	Tl ⁺	5.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712
	Tl ⁺	14.2 (TlHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Tl ⁺ + L + H ⁺)	712
Pb ²⁺	14.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	712	
Pb ²⁺	20.0 (PbHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃ (Pb ²⁺ + L + H ⁺)	712	
A ₂ 18C6-56	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.97	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	613
A ₂ 18C6-57	Na ⁺	5.74	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
	K ⁺	5.60	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
	NH ₄ ⁺	6.51	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
K ₂ A ₂ 18C6-1	K ⁺	4.10	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
	NH ₄ ⁺	3.47	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
K ₂ A ₂ 18C6-2	Na ⁺	nm	Cal			25	MeCN	408
	Na ⁺	nm	Cal			25	MeOH	408
	K ⁺	nm	Cal			25	MeCN	408
	K ⁺	nm	Cal			25	MeOH	408
	Rb ⁺	nm	Cal			25	MeCN	408
	Rb ⁺	nm	Cal			25	MeOH	408
	Cs ⁺	nm	Cal			25	MeCN	408
	Cs ⁺	nm	Cal			25	MeOH	408
	Ca ²⁺	nm	Cal			25	MeOH	408
	Sr ²⁺	nm	Cal			25	MeOH	408
	Ba ²⁺	3.89	Cal	-9.3	43.0	25	MeCN	408
	Ba ²⁺	nm	Cal			25	MeOH	408
	Ag ⁺	nm	Cal			25	MeCN	408
	Ag ⁺	nm	Cal			25	MeOH	408
K ₂ A ₂ 18C6-3	Pb ²⁺	nm	Cal			25	MeOH	408
	H ⁺	6.97(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	H ⁺	3.75(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	H ⁺	2.37(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	H ⁺	1.66(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	La ³⁺	8.46	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Ce ³⁺	8.44	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Pr ³⁺	8.67	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Nd ³⁺	9.18	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Sm ³⁺	9.37	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Eu ³⁺	10.03	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Gd ³⁺	9.59	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
BA ₂ 18C6-1	Tb ³⁺	9.56	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Dy ³⁺	9.31	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Ho ³⁺	9.44	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Er ³⁺	8.78	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Tm ³⁺	8.56	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Yb ³⁺	8.52	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Lu ³⁺	8.57	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150	
	Ca ²⁺	3.8	Pot			25	MeOH	413	
	Sr ²⁺	4.9	Pot			25	MeOH	413	
	Ba ²⁺	4.5	Pot			25	MeOH	413	
	Ag ⁺	9.74	Pot			25	MeOH	413	
	B ₂ A ₂ 18C6-1	4-CH ₃ PhN ₂ ⁺	1.7	NMR			25	CDCl ₃ /MeCN-d ₃ (1:1), (anion = BPh ₄ ⁻)	714
	B ₂ A ₂ 18C6-2	4-CH ₃ PhN ₂ ⁺	2.2	NMR			25	CDCl ₃ /MeCN-d ₃ (1:1), (anion = BPh ₄ ⁻)	714
	B ₂ A ₂ 18C6-3	4-CH ₃ PhN ₂ ⁺	2.8	NMR			25	CDCl ₃ /MeCN-d ₃ (1:1), (anion = BPh ₄ ⁻)	714
	B ₂ A ₂ 18C6-4	4-CH ₃ PhN ₂ ⁺	2.1	NMR			25	CDCl ₃ /MeCN-d ₃ (1:1), (anion = BPh ₄ ⁻)	714
	Py ₂ B ₂ A ₂ 18C6-1	H ⁺	4.53(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
		H ⁺	2.64(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
		Co ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
		Ni ²⁺	4.56	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430
Cu ²⁺		11.08	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
Zn ²⁺		<3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	431	
Cd ²⁺		6.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	431	
A ₃ 18C6-1		H ⁺	10.23(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	534
	H ⁺	7.53(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	534	
	H ⁺	5.42(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	534	
	Na ⁺	3.11	ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534	
	K ⁺	3.78	ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534	
	Hg ²⁺	>23.6	Polg			25	67% PC/DCE, 0.1 M Hex ₄ NClO ₄	700	
	NH ₄ ⁺	3.62	Polg			25	DMF, 0.1 M Hex ₄ NClO ₄	701	
	NH ₄ ⁺	3.34	Polg			25	67% PC/DCE, 0.1 M Hex ₄ NClO ₄	701	
	CH ₃ NH ₃ ⁺	4.81	Na ⁺ ISE/ K ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534	
	C ₂ H ₅ NH ₃ ⁺	4.49	Na ⁺ ISE/ K ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534	
	Ph(CH ₂) ₂ NH ₃ ⁺	4.70	Na ⁺ ISE/ K ⁺ ISE			25	MeOH·H ₂ O, 0.1 M Me ₄ NBr	534	
A ₃ 18C6-2	Ag ⁺	>5.5	Cal			25	Me ₂ SO	205	
	Cd ²⁺	2.62	Cal	-26.4	-38.2	25	Me ₂ SO	204, 205	
	Pb ²⁺	4.33	Cal	-48.7	-80.5	25	Me ₂ SO	204, 205	
	NH ₄ ⁺	4.20	Cal	-21.7	8	25	MeOH·H ₂ O (9:1/v:v)	205	
	CH ₃ NH ₃ ⁺	4.15	Cal	-33.3	-32	25	MeOH·H ₂ O (9:1/v:v)	205, 715	
Chart XXXVI									
A ₄ 18C6-1	H ⁺	9.36(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	H ⁺	8.40(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	H ⁺	6.27(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	H ⁺	5.23(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	H ⁺	5.25(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Sr ²⁺	<2.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Ba ²⁺	<2.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Ni ²⁺ (L) ^d	12.5	Pot			25	H ₂ O, 0.1 M NaNO ₃	176	
	Ni ²⁺	12.25	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Cu ²⁺	16.27	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Cu ²⁺	16.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	176	
	Ag ⁺	11.2	Pot			25	MeOH	717	
	Zn ²⁺	10.51	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Cd ²⁺	10.90	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	Pb ²⁺	9.01	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a, 716	
	A ₄ 18C6-2	H ⁺	8.54(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	7.73(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
H ⁺		4.06(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
H ⁺		3.09(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Sr ²⁺		3.81	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Ba ²⁺		4.30	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Ni ²⁺		5.72	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cu ²⁺		11.7	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cu ²⁺		3.3	(Cu ₂ L)			25	H ₂ O, 0.1 M NaNO ₃	431a	
Zn ²⁺		5.90	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cd ²⁺		8.84	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Pb ²⁺		10.72	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
A ₄ 18C6-3		H ⁺	8.79(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
	H ⁺	8.02(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	H ⁺	3.87(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	H ⁺	3.11(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Sr ²⁺	3.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ba ²⁺	4.14	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ni ²⁺	6.03	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ni ²⁺	7.3	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	(NiHL)	(NiHL)					(NiL ²⁺ + H ⁺)	431a	
	Cu ²⁺	11.8	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Cu ²⁺	3.5(Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
A ₄ 18C6-4	Zn ²⁺	6.26	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Cd ²⁺	8.39	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Pb ²⁺	10.57	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ag ⁺	13.4	Pot	-84.3(Cal)	-26.2	25	MeOH	717	
Chart XXXV									
A ₄ 18C6-5	H ⁺	8.63(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	H ⁺	6.73(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	H ⁺	3.20(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	H ⁺	1.33(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Sr ²⁺	<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Ba ²⁺	<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Ni ²⁺	<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Cu ²⁺	7.04	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Zn ²⁺	<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Cd ²⁺	4.79	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	Pb ²⁺	5.36	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
	A ₄ 18C6-6	H ⁺	8.57(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716
		H ⁺	7.63(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716
		H ⁺	2.65(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716
H ⁺		2.08(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
Ni ²⁺		<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
Cu ²⁺		<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
Zn ²⁺		<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
Cd ²⁺		<2	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
Pb ²⁺		4.73	Pot			25	H ₂ O, 0.1 M NaNO ₃	716	
A ₄ 18C6-7		Pb ²⁺	5.0	Pot			25	H ₂ O, 0.1 M NaNO ₃	176
		H ⁺	9.19(1)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	8.51(2)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	6.00(3)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
		H ⁺	2.56(4)	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a
	Ca ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Sr ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ba ²⁺	none	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ni ²⁺	12.49	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Ni ²⁺	4.65	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(NiHL)					(NiL ²⁺ + H ⁺)	431a	
	Ni ²⁺	17.14	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(NiHL)					(Ni ²⁺ + H ⁺ + L)	431a	
	Cu ²⁺	17.85	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Cu ²⁺	21.08	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(CuHL)					(Cu ²⁺ + H ⁺ + L)	431a	
	Cu ²⁺	23.2	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(CuH ₂ L)					(Cu ²⁺ + 2H ⁺ + L)	431a	
	Zn ²⁺	9.52	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
	Zn ²⁺	14.88	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(ZnHL)					(Zn ²⁺ + H ⁺ + L)	431a	
	Zn ²⁺	20.28	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
		(ZnH ₂ L)					(Zn ²⁺ + 2H ⁺ + L)	431a	
	Cd ²⁺	10.00	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a	
Cd ²⁺	16.02	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a		
	(CdHL)					(Cd ²⁺ + H ⁺ + L)	431a		
Pb ²⁺	9.11	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a		
Pb ²⁺	14.6	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a		
	(PbHL)					(Pb ²⁺ + H ⁺ + L)	431a		
Pb ²⁺	20.65	Pot			25	H ₂ O, 0.1 M NaNO ₃	431a		
	(PbH ₂ L)					(Pb ²⁺ + 2H ⁺ + L)	431a		
K ₄ A ₄ 18C6-1	Ba ²⁺ , 2Pic	3.8	UV Spec			25?	THF	718	
K ₄ A ₄ 18C6-2	Ba ²⁺ , 2Pic	4.9	UV Spec			25?	THF	718	
Py ₂ B ₂ A ₄ 18C6-tetraene-1	Na ⁺	3.0	ISE			25	Me ₂ SO	719	
	K ⁺	3.7	ISE			25	Me ₂ SO	719	
	K ⁺	4.1	NMR			25	Me ₂ SO·d ₆ (anion = CF ₃ SO ₃ ⁻)	555	
	K ⁺	4.1	NMR			25	Me ₂ SO·d ₆ (anion = ClO ₄ ⁻)	556	
	A ₆ 18C6-1	H ⁺	9.48(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
H ⁺		9.29(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
H ⁺		7.74(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
H ⁺		3.65(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
H ⁺		1.0(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
Na ⁺		none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
K ⁺		none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
Mg ²⁺		none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
Ca ²⁺		none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
PyA ₆ 18C6-1		H ⁺	9.63(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
		H ⁺	9.05(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
		H ⁺	7.56(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
		Na ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
		K ⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244
	Mg ²⁺	none	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
	Ca ²⁺	2.70	Pot			25	H ₂ O, 0.1 M NaClO ₄	244	
A ₆ 18C6-1	H ⁺	3.688							
		(H ₄ L)		Pot		25	H ₂ O, $I = 0.44$ (H ⁺ + H ₃ L ³⁺)	720	
	H ⁺	3.597							
		(H ₄ L)		Pot		25	H ₂ O, $I = 0.29$ (H ⁺ + H ₃ L ³⁺)	720	
	H ⁺	3.523							
	(H ₄ L)		Pot		25	H ₂ O, $I = 0.22$ (H ⁺ + H ₃ L ³⁺)	720		
H ⁺	3.434								
	(H ₄ L)		Pot		25	H ₂ O, $I = 0.15$ (H ⁺ + H ₃ L ³⁺)	720		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	3.380 (H ₄ L)	Pot			25	H ₂ O, I = 0.11 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	3.680 (H ₄ L)	Pot			15	H ₂ O, I = 0.22 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	3.345 (H ₄ L)	Pot	-59.0	-134	25	H ₂ O, I = 0.22 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	3.025 (H ₄ L)	Pot			35	H ₂ O, I = 0.22 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	2.707 (H ₄ L)	Pot			45	H ₂ O, I = 0.22 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	2.369 (H ₄ L)	Pot			55	H ₂ O, I = 0.22 (H ⁺ + H ₃ L ³⁺)	720
	H ⁺	3.588 (H ₄ L)	Pot			15	H ₂ O, 0.205 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	3.214 (H ₄ L)	Pot			25	H ₂ O, 0.205 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.889 (H ₄ L)	Pot			35	H ₂ O, 0.205 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.593 (H ₄ L)	Pot			45	H ₂ O, 0.205 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.274 (H ₄ L)	Pot			55	H ₂ O, 0.205 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	3.602 (H ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	3.248 (H ₄ L)	Pot	-58.6	-134	25	H ₂ O, 0.22 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.903 (H ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.607 (H ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.309 (H ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	2.55 (H ₄ L)	Pot			15	H ₂ O, 0.05 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	3.08 (H ₄ L)	Pot			25	H ₂ O, 0.11 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	3.22 (H ₄ L)	Pot			35	H ₂ O, 0.21 M NaCl (H ⁺ + H ₃ L ³⁺)	721
	H ⁺	10.46(1)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	9.51(2)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	9.01(3)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	4.30(4)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~2(5)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~1(6)	Pot			15	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	10.19(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	9.23(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	8.73(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	4.09(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~2(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~1(6)	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	9.92(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	8.96(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	8.45(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	3.89(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	~1(6)	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	H ⁺	10.42(1)	Pot			20	H ₂ O, 0.1 M NaCl	723
	H ⁺	9.58(2)	Pot			20	H ₂ O, 0.1 M NaCl	723
	H ⁺	8.51(3)	Pot			20	H ₂ O, 0.1 M NaCl	723
	H ⁺	4.89(4)	Pot			20	H ₂ O, 0.1 M NaCl	723
	H ⁺	~3(5)	Pot			20	H ₂ O, 0.1 M NaCl	723
	H ⁺	2(6)	Pot			20	H ₂ O, 0.1 M NaCl	723
	K ⁺	~0.8	Pot			25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	Ca ²⁺	2.5	Pot	-28.9	-50.2	25	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	Sr ²⁺	3.2	Pot			35	H ₂ O, 0.2 M NaClO ₄ or Et ₄ NClO ₄	722
	La ³⁺	9.1	Pot			20	H ₂ O, 0.1 M NaCl	723

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	La ³⁺	5.7	Pot			25	H ₂ O, 0.2 M NaClO ₄		
	Ce ³⁺	9.8	Pot			20	or Et ₄ NClO ₄	722	
	Pr ³⁺	10.0	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Nd ³⁺	10.2	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Sm ³⁺	10.1	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Eu ³⁺	10.1	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Gd ³⁺	9.8	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Tb ³⁺	10.0	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Dy ³⁺	10.1	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Ho ³⁺	10.1	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Er ³⁺	10.0	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Tm ³⁺	10.4	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Yb ³⁺	11.2	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Lu ³⁺	11.8	Pot			20	H ₂ O, 0.1 M NaCl	723	
	Co ²⁺	18.9	Pot			35	H ₂ O, 0.2 M NaClO ₄		
							or Et ₄ NClO ₄	722	
	Co ²⁺	11.8	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(CoHL)					or Et ₄ NClO ₄	722	
	Ni ²⁺	19.6	Pot			35	H ₂ O, 0.2 M NaClO ₄		
							or Et ₄ NClO ₄	722	
	Ni ²⁺	13.9	Pot			35	H ₂ O, 0.2 M NaClO ₄		
		(NiHL)					or Et ₄ NClO ₄	722	
	Cu ²⁺	21.6	Pot	-95.8	92.0	25	H ₂ O, 0.2 M NaClO ₄		
							(CuHL) or Et ₄ NClO ₄	722	
	Cu ²⁺	16.1	Pot			25	H ₂ O, 0.2 M NaClO ₄		
							(CuH ₂ L) or Et ₄ NClO ₄	722	
	Zn ²⁺	17.8	Pot	-51.9	167	25	H ₂ O, 0.2 M NaClO ₄		
							or Et ₄ NClO ₄	722	
	Zn ²⁺	18.70	Pot	-58.6(Cal)		25	H ₂ O, 0.15 M NaClO ₄	724	
	Zn ²⁺	22.63	Pot			25	H ₂ O, 0.15 M NaClO ₄		
		(ZnHL)					(Zn ²⁺ + L + H ⁺)	724	
	Cd ²⁺	18.80	Pot	-64.0(Cal)	145	25	H ₂ O, 0.15 M NaClO ₄	725	
	Cd ²⁺	17.9	Pot	-59.0	142	25	H ₂ O, 0.2 M NaClO ₄		
							or Et ₄ NClO ₄	722	
	Hg ²⁺	29.1	Polg	-176	-16.7	25	H ₂ O, 0.2 M NaClO ₄		
		(HgHL)					or Et ₄ NClO ₄	722	
	Pb ²⁺	14.1	Pot	-55.6	83.7	25	H ₂ O, 0.2 M NaClO ₄		
							or Et ₄ NClO ₄	722	
	UO ₂ ²⁺	7.36	Spec			25	PC, 0.1 M Et ₄ NClO ₄	334	
	UO ₂ ²⁺	14.45	Spec			25	PC, 0.1 M Et ₄ NClO ₄		
		(UO ₂) ₃ L					(3UO ₂ ²⁺ + L))	334	
	cation·15 ^f	3.04	Polg			25	H ₂ O, 0.2 M NaClO ₄		
		(H ₃ C ⁺ H ₃ L)					pH 7.1-7.8 (0.05-0.2M Tris)		
							(H ₃ C ⁺ + H ₃ L ³⁺ ; C ⁺ = cation)	726	
	cation·16 ^f	3.0	Polg			25	H ₂ O, 0.2 M NaClO ₄		
		(H ₃ C ⁺ H ₃ L)					pH 7.1-7.8 (0.05-0.2M Tris)		
							(H ₃ C ⁺ + H ₃ L ³⁺ ; C ⁺ = cation)	726	
	cation·17 ^f	2.76	Polg			25	H ₂ O, 0.2 M NaClO ₄		
		(H ₃ C ⁺ H ₃ L)					pH 7.1-7.8 (0.05-0.2M Tris)		
							(H ₃ C ⁺ + H ₃ L ³⁺ ; C ⁺ = cation)	726	
A ₆ 18C6-2	H ⁺	10.10(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	H ⁺	10.01(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	H ⁺	8.96(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	H ⁺	8.20(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	H ⁺	<5(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	H ⁺	<5(6)	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	Mg ²⁺	8.23	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
	Ca ²⁺	7.93	Pot			25	H ₂ O, 0.2 M NaClO ₄	727	
		(CaHL)						727	
K ₂ A ₆ 18C6-1	H ⁺	8.70(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	H ⁺	7.10(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	H ⁺	~2(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	H ⁺	~1(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	459	
	Cu ²⁺	10.56	Pot			25	H ₂ O, 0.2 M NaClO ₄	436	
	Cu ²⁺	5.03	Pot			25	H ₂ O, 0.2 M NaClO ₄		
		(CuH ₂ L)					(Cu ²⁺ + L)	436	
	Hg ²⁺	9.64	Polg			25	H ₂ O, 0.2 M NaClO ₄		
		(HgH ₁ L)					(Hg ²⁺ + L)	459	
	Hg ²⁺	9.81	Pot			25	H ₂ O, 0.2 M NaClO ₄		
		(HgH ₁ L)					(Hg ²⁺ + L)	459	
Torand·A ₆ 18C6-1	Na ⁺	14.7	NMR			25	D ₂ O sat'd CDCl ₃		
							(anion = picrate)	728	
	K ⁺	14.3	NMR			25	D ₂ O sat'd CDCl ₃		
							(anion = picrate)	728	
PyridonoT18C6-1 (Chart XXXI)	H ⁺	3.03	Pot			25	H ₂ O, 0.1 M HNO ₃	461a	
	Ag ⁺	5.36	Pot			25	H ₂ O, 0.1 M HNO ₃	461a	
	Hg ²⁺	3.99	Pot			25	H ₂ O, 0.1 M HNO ₃	461a	
	Pb ²⁺	<1	Pot			25	H ₂ O, 0.1 M HNO ₃	461a	
PyridonoT18C6-2	H ⁺	10.13	Pot			25	H ₂ O, 0.1 M KNO ₃	461a	
	Ag ⁺	9.44	Pot			25	H ₂ O, 0.1 M KNO ₃	461a	
	Hg ²⁺	9.75	Pot			25	H ₂ O, 0.1 M KNO ₃	461a	
Chart XXXVII									
T18C6-1	(C ₂ H ₅) ₂ Tl ³⁺	>3	NMR	nm	nm	25	MeCN-d ₃ (anion = ClO ₄ ⁻)	729	
T ₂ 18C6-1	Pd ²⁺	25.1(1+2)	Cal	-184.1	-137	25	H ₂ O, 0.5 M HNO ₃	205, 730	
	Ag ⁺	3.05	Cal	-65.7	-163	25	H ₂ O, 0.1 M HNO ₃	461a	
	Hg ²⁺	22.2(1+2)	Polg	-116.5(Cal)	34.9	25	H ₂ O, 0.5 M HNO ₃	205, 730	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
T ₂ 18C6-2	(CH ₃) ₂ Tl ³⁺	1.90	NMR	-26	-50	25	MeOH- <i>d</i> ₃ (anion = ClO ₄ ⁻)	729	
	(C ₂ H ₅) ₂ Tl ³⁺	>3	NMR	nm	nm	25	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	729	
T ₂ 18C6-3	Na ⁺	1.52	NMR			28	DMF	584	
	Na ⁺	nm	Cal			25	MeCN	298	
	Na ⁺	1.82	NMR			28	MeCN	584	
	Na ⁺	2.42	NMR			28	Me ₂ CO	584	
	Na ⁺	0	NMR			28	Me ₂ SO	584	
	Na ⁺	3.25	NMR			28	NMe	584	
	Na ⁺	1.87	NMR			28	PC	584	
	K ⁺	nm	Cal			25	MeCN	298	
	K ⁺	nm	Cond			25	MeOH (anion = ClO ₄ ⁻)	536	
	Rb ⁺	nm	Cal			25	MeCN	298	
	Cs ⁺	0.56	NMR			28	DMF	584	
	Cs ⁺	nm	Cal			25	MeCN	298	
	Cs ⁺	0.97	NMR			28	MeCN	584	
	Cs ⁺	0.61	NMR			28	Me ₂ CO	584	
	Cs ⁺	0	NMR			28	Me ₂ SO	584	
	Cs ⁺	1.16	NMR			28	NMe	584	
	Cs ⁺	0.96	NMR			28	PC	584	
	Ba ²⁺	3.73	Pot		-24.6(Cal)	-117	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Eu ³⁺ , ³ Fod ⁻	0.72	NMR				25?	CDCl ₃ (Fod = hexafluoro- dimethyloctanedionate)	336a
		0.73							
	Pd ²⁺	21.1	Cal		-82.4	127.6	25	H ₂ O, 0.5 M HNO ₃	205, 730
	Ag ⁺	8.1	Ag ⁺ -ISE				25	H ₂ O	121
	Ag ⁺	8.8	Ag ₂ S-ISE				25	H ₂ O	121
	Ag ⁺	5.27	Cal		-75.0	-141	25	H ₂ O, 0.1 M HNO ₃	461a
	Ag ⁺	7.27	Pot		-39.32(Cal)	7.2	25	H ₂ O (anion = NO ₃ ⁻)	731
	Ag ⁺	2.65(Ag ₂ L)	Pot		-33.89(Cal)	-62.7	25	H ₂ O (anion = NO ₃ ⁻)	731
	Ag ⁺	6.30	ISE		-41.5	-19.1	25	MeCN, 0.05 M Et ₄ NClO ₄	298
	Ag ⁺	5.10	Cond		-42.6	45.3	25	MeOH (anion = ClO ₄ ⁻)	536
	Ag ⁺	2.6(1)	OSM				45	MeOH (anion = NO ₃ ⁻)	732
	Ag ⁺	2.1(2)	OSM				45	MeOH (anion = NO ₃ ⁻)	732
	Ag ⁺	10.33	Pot		-64(Cal)	-18	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Au ³⁺ , ⁴ Cl ⁻	5.79	Cl-ISE				25?	H ₂ O, pH 2 (HCl), (AuCl ₄ ⁻ + L = AuLCl _{4-m} + mCl ⁻ ; m = ~2)	733
		(AuCl ₂ L)							
	Cd ²⁺	1.9	OSM				45	MeOH (anion = NO ₃ ⁻)	732
	Hg ²⁺	19.5	Polg		-74.0(Cal)	125.0	25	H ₂ O, 0.5 M HNO ₃	205, 730
	Hg ²⁺	3.0(1)	OSM				45	MeOH (anion = Cl ⁻)	732
	Hg ²⁺	1.9(2)	OSM				45	MeOH (anion = Cl ⁻)	732
	Hg ²⁺	2.7(1)	OSM				45	MeOH (anion = CH ₃ COO ⁻)	732
	Hg ²⁺	1.8(2)	OSM				45	MeOH (anion = CH ₃ COO ⁻)	732
	Hg ²⁺	2.6(1)	OSM				45	MeOH (anion = Br ⁻)	732
	Hg ²⁺	2.1(2)	OSM				45	MeOH (anion = Br ⁻)	732
	Tl ⁺	3.93	Cal		-11.2	37.2	25	MeOH	109
	Tl ⁺	0.93	NMR				25	H ₂ O	587
Tl ⁺	0.93	NMR				28	H ₂ O	584	
Tl ⁺	1.19	NMR				25	DMF	587	
Tl ⁺	1.24	NMR				28	DMF	584	
Tl ⁺	~0	NMR				25	HMPA	587	
Tl ⁺	4.16	NMR				25	MeCN	587	
Tl ⁺	>5	NMR				28	MeCN	584	
Tl ⁺	3.12	NMR				25	Me ₂ CO	587	
Tl ⁺	2.98	NMR				28	Me ₂ CO	584	
Tl ⁺	0	NMR				28	Me ₄ Guan	584	
Tl ⁺	3.25	Cond		-33.1	48.4	25	MeOH (anion = ClO ₄ ⁻)	536	
Tl ⁺	~0	NMR				25	Me ₂ SO	587	
Tl ⁺	0	NMR				28	Me ₂ SO	584	
Tl ⁺	>5	NMR				25	NMe	587	
Tl ⁺	>5	NMR				28	NMe	584	
Tl ⁺	2.66	NMR				25	Sulfolane	587	
Pb ²⁺	3.31	Cal		-75.0	-141	25	H ₂ O, 0.1 M HNO ₃	461a	
Pb ²⁺	4.76	Cal		-34.5	-25.2	25	MeOH	109	
Pb ²⁺	2.5	OSM				45	MeOH (anion = NO ₃ ⁻)	732	
UO ₂ ²⁺	3.66	Spec				25	PC, 0.1 M Et ₄ NClO ₄	334	
NH ₄ ⁺	3.21	Cond		-26.6	27.6	25	MeOH (anion = ClO ₄ ⁻)	536	
(CH ₃) ₂ Tl ³⁺	0.93	NMR		-18	-41	25	MeOH- <i>d</i> ₃ (anion = ClO ₄ ⁻)	729	
	(C ₂ H ₅) ₂ Tl ³⁺	>3	NMR	nm	nm	25	MeCN- <i>d</i> ₃ (anion = ClO ₄ ⁻)	729	
T ₂ 18C6-4	K ⁺	3.3	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (K ⁺ + L ⁺)	606	
	Ag ⁺	5.7	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (Ag ⁺ + L ⁺)	606	
B ₂ T ₂ 18C6-1	Cd ²⁺	3.9	Pot			25	H ₂ O, 0.05 M Me ₄ NCl, (Cd ²⁺ + L ⁺)	606	
	Ag ⁺	5.6(1)	ISE			25	Diox-H ₂ O (75:25/v/v), 0.01 M HNO ₃ + 0.09 M Me ₄ NNO ₃	734	
	Ag ⁺	2.5(2)	ISE			25	Diox-H ₂ O (75:25/v/v), 0.01 M HNO ₃ + 0.09 M Me ₄ NNO ₃	734	
							CDCl ₃ (anion = picrate)		
K ₂ PhenT ₂ 18C6-1 (Chart XXXIII)	Na ⁺	4.67	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	K ⁺	4.49	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Rb ⁺	4.15	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate) (other complex than 1:1)	429	
	Cs ⁺	3.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Mg ²⁺	3.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ca ²⁺	5.27	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ba ²⁺	5.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Cu ²⁺	4.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	NH ₄ ⁺	4.02	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
A ₂ T ₂ 18C6-1	Ag ⁺	11.5	Pot	-67.7(Cal)	-6.7	25	MeOH	696
A ₄ T ₂ 18C6-1 (Chart XXXVI)	H ⁺	9.26(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	8.45(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	5.81(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	4.88(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	10.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	9.05(AgHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	6.00(AgH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	4.13(AgH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	14.1	Pot	-77.0(Cal)	11.1	25	MeOH	717
A ₄ T ₂ 18C6-2 (Chart XXXVI)	H ⁺	8.82(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	8.35(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	4.13(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	H ⁺	3.71(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	9.47	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	8.06(AgHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	4.31(AgH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	717
	Ag ⁺	14.6	Pot	-102.1(Cal)	-62.8	25	MeOH	717
T ₃ 18C6-1	(CH ₃) ₂ Tl ³⁺	2.09	NMR	-12	-22	25	MeCN-d ₃ (anion = ClO ₄ ⁻)	729
	(C ₂ H ₅) ₂ Tl ³⁺	1.56	NMR	-21	-40	25	MeCN-d ₃ (anion = ClO ₄ ⁻)	729
T ₃ 18C6-2	(CH ₃) ₂ Tl ³⁺	1.68	NMR	-9.6	-62	25	MeCN-d ₃ (anion = ClO ₄ ⁻)	729
	(C ₂ H ₅) ₂ Tl ³⁺	1.49	NMR	-41	-110	25	MeCN-d ₃ (anion = ClO ₄ ⁻)	729
A ₂ T ₄ 18C6	Ag ⁺	13.7	Pot	-83.2(Cal)	-16.8	25	MeOH	696
(TO) ₂ 18C6-1	Au ³⁺ ,4Cl ⁻ (AuCl ₂ L)	7.77	Cl-ISE			25?	H ₂ O, pH 2 (HCl), (AuCl ₄ ⁻ + L = AuLCl _{4-m} + mCl ⁻ ; m = ~2)	733
(TO) ₂ 18C6-2	Au ³⁺ ,4Cl ⁻ (AuCl ₂ L)	7.79	Cl-ISE			25?	H ₂ O, pH 2 (HCl), (AuCl ₄ ⁻ + L = AuLCl _{4-m} + mCl ⁻ ; m = ~2)	733
Spher-19C2-1	Li ⁺	5.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	5.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	5.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	4.51	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	4.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	3.97	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-19C2-2	Li ⁺	4.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	5.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	6.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	4.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	4.58	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	5.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-19C2-3	Li ⁺	4.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	4.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	4.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	4.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	4.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-(Nap) ₂ 19C2-1	Li ⁺	4.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	Na ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	K ⁺	7.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	Rb ⁺	6.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	Cs ⁺	5.75	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	NH ₄ ⁺	6.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
Spher-BA ₄ 19C4-1	Li ⁺	12.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Na ⁺	11.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	K ⁺	7.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Rb ⁺	6.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Cs ⁺	7.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	NH ₄ ⁺	7.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	CH ₃ NH ₃ ⁺	7.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	<i>t</i> -C ₄ H ₉ NH ₄ ⁺	5.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
B ₂ 19C5-1	Li ⁺	4.2	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Na ⁺	4.6	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	K ⁺	4.5	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Rb ⁺	4.0	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	454	
	Cs ⁺	3.9	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	NH ₄ ⁺	4.2	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
B ₂ 19C5-2	Na ⁺	2.08	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = BPh ₄ ⁻)	736	
	Hg ²⁺ , 2CF ₃ ⁻	1.11	NMR			15	Me ₂ CO- <i>d</i> ₆ /C ₆ D ₆ (1:1/v:v)	736	
Py ₂ 19C5-1	Li ⁺	5.0	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Na ⁺	4.6	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	K ⁺	5.1	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	NH ₄ ⁺	4.8	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Rb ⁺	4.2	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
	Cs ⁺	5.1	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454	
PyB ₂ A ₂ 19C5-1	H ⁺	3.56(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	H ⁺	~1.82(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Co ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Ni ²⁺	<4.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
	Cu ²⁺	~9.0	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	430	
Chart XXXVIII									
B ₂ A ₃ 19C5-1	H ⁺	10.32(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	8.31(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	5.87(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	10.33(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	8.36(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	5.59(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	Co ²⁺	5.07	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Ni ²⁺	6.36	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Cu ²⁺	11.54	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Cu ²⁺	16.16	Pot			25	95% MeOH, 0.1 M Me ₄ NCl (Cu ²⁺ + L + H ⁺)	481	
	Ag ⁺	(1)	Cal	-49		30	MeCN	277	
	Ag ⁺	2.53(2)	Cal	-21		30	MeCN	277	
	Zn ²⁺	6.55	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516	
	Cd ²⁺	5.33	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516	
B ₂ A ₃ 19C5-2	H ⁺	10.22(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	8.76(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	4.72(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	10.05(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	8.72(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	4.90(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Ni ²⁺	<6 ppt	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Zn ²⁺	5.89	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516	
	Cd ²⁺	4.68	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516	
	Cd ²⁺	1.91 (CdHL)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
B ₂ A ₃ 19C5-3	H ⁺	10.19(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	7.77(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	4.96(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	H ⁺	10.24(1)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	7.84(2)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	H ⁺	4.42(3)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486	
	Co ²⁺	<5	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Ni ²⁺	5.14	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Ni ²⁺	12.99 (NiHL)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl (Ni ²⁺ + L + H ⁺)	481	
	Cu ²⁺	10.53	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	481	
	Cu ²⁺	17.71 (CuHL)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl (Cu ²⁺ + L + H ⁺)	481	
	Zn ²⁺	6.04	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A ₆ 19C5-1	Zn ²⁺	2.69 (ZnHL)	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486
	Cd ²⁺	4.95	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	486, 516
	H ⁺	10.11(1)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	9.52(2)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	8.51(3)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	2.5(4)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	H ⁺	<2(5)	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
B ₂ A ₂ T19C5-1 19C6-1	Co ²⁺	7.36	Pot			35	H ₂ O, 0.2 M NaClO ₄	196
	Ag ⁺		Cal	-53		30	MeCN	277
19C6-2	Na ⁺	2.62	ISE			25	MeOH	464
	K ⁺	4.03	ISE			25	MeOH	464
19C6-2	Na ⁺	1.98	NMR			30	Py/Py-d ₆ (1:1), 0.07-0.17 M NaClO ₄	363
19C6-3	Na ⁺	3.00	NMR			30	Py/Py-d ₆ (1:1), 0.07-0.17 M NaClO ₄	363
19C6-4	H ⁺	5.87	Pot			25	52.1 wt% MeOH-H ₂ O	599
19C6-5	K ⁺	3.81	ISE			25	MeOH	466
19C6-6	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.04	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
19C6-7	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.65	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
B19C6-1	Li ⁺	5.33	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	5.10	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	6.35	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	3.33	Cal	-68.07	-164.7	25	MeOH-H ₂ O (8:2)	141
B ₂ 19C6-1	Rb ⁺	5.73	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Cs ⁺	5.20	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	H ⁺	3.89	Pot			25?	H ₂ O	192
	H ⁺	8.34	Pot	47.7	0	25	Diox-H ₂ O (7:3/v:v)	193
B ₂ 19C6-2	H ⁺	8.07	Pot		0	35	Diox-H ₂ O (7:3/v:v)	193
	H ⁺	8.87	Pot	-19.2	-234	25	Diox-H ₂ O (7:3/v:v)	208
(1,3-B)19C6-1	H ⁺	8.98	Pot		-234	35	Diox-H ₂ O (7:3/v:v)	208
Spher-BA ₆ 19C6-1	Ag ⁺	5.77	Spec			25?	MeOH (anion = ClO ₄ ⁻)	471
	Li ⁺	6.23(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
Spher-BA ₆ 19C6-2	Li ⁺	1.85(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	5.72(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	1.74(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	5.20(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	1.66(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	4.85(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	1.61(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	5.04(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	1.65(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	NH ₄ ⁺	5.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	CH ₃ NH ₃ ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	13.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Li ⁺	13.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	11.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Na ⁺	11.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	9.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	K ⁺	9.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Rb ⁺	8.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
Cs ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
Cs ⁺	8.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737	
NH ₄ ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
A ₄ 19C7-1	NH ₄ ⁺	8.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737	
	CH ₃ NH ₃ ⁺	8.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	CH ₃ NH ₃ ⁺	8.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737	
	<i>t</i> -C ₄ H ₉ NH ₄ ⁺	9.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737	
	Ag ⁺	3.46	Cal	-53.9	-114.5	25	Me ₂ SO	204, 205	
	Cd ²⁺	<0.5	Cal	nm		25	Me ₂ SO	204, 205	
Pb ²⁺	<0.5	Cal	nm		25	Me ₂ SO	204, 205		
CH ₃ NH ₃ ⁺	1.52	Cal	-23.7	-50.3	20	MeOH-H ₂ O (9:1/v/v)	205, 715		
Chart XXXIX									
PhosB ₂ 19C7-1	Ca ²⁺	1.98(1)	Cal	-17.2	-19.7	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.61(2)	Cal	-17.4	-8.4	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	1.66(1)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.21(2)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.07(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
PhosB ₂ 19C7-2	Ca ²⁺	2.33(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	2.75(1)	Cal	-6.4	31.3	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	1.75(2)	Cal			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.47(1)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.37(2)	Spec			25	MeCN (anion = SCN ⁻)	133	
PhosB ₂ 19C7-3	Ca ²⁺	2.83(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	1.24(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	2.1(1)	Cal	-6	20	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	3.5(2)	Cal	2	70	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.1(1)	Spec			25	MeCN (anion = SCN ⁻)	133	
PhosB ₂ 19C7-4	Ca ²⁺	3.3(2)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.0(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	2.3(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	2.28(1)	Cal	-7.7	17.8	25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	1.12(2)	Cal	0.7	22.2	25	MeCN (anion = SCN ⁻)	133	
Calix5-20C-1	Ca ²⁺	2.74(1)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	0.86(2)	Spec			25	MeCN (anion = SCN ⁻)	133	
	Ca ²⁺	2.5(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	Ca ²⁺	2.5(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133	
	UO ₂ ²⁺	18.9	Spec			25	H ₂ O, pH 10.4 (0.01 M carbonate)	443, 444	
Calix5-20C-2	UO ₂ ²⁺	18.9	Spec			30	H ₂ O	445	
	UO ₂ ²⁺	18.4	Spec			25	H ₂ O, pH 10.4 (0.01 M carbonate)	443, 444	
Spher-20C-1	UO ₂ ²⁺	18.4	Spec			30	H ₂ O	445	
	Li ⁺	4.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	Na ⁺	7.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	Rb ⁺	5.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	Cs ⁺	4.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	NH ₄ ⁺	4.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	CH ₃ NH ₃ ⁺	3.73	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
	H ⁺	13.2(1)	Pot			24	H ₂ O-Diox (1:1/v/v)	739, 740	
K ₂ (1,3-B) ₂ 20C-diene-1	H ⁺	10.6(2)	Pot			24	H ₂ O-Diox (1:1/v/v)	739, 740	
	Mg ²⁺	5.5	Pot			24	H ₂ O-Diox (1:1/v/v), (anion = NO ₃ ⁻)	739, 740	
	Ca ²⁺	4.1	Pot			24	H ₂ O-Diox (1:1/v/v), (anion = NO ₃ ⁻)	739, 740	
	Sr ²⁺	2.8	Pot			24	H ₂ O-Diox (1:1v:v), (anion = NO ₃ ⁻)	739, 740	
	Ba ²⁺	2.5	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Co ²⁺	8.6	Pot			24	H ₂ O-Diox (1:1v/v), (anion = NO ₃ ⁻)	739, 740	
	Cu ²⁺	12.0	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Zn ²⁺	9.0	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Cd ²⁺	7.5	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Pb ²⁺	9.0	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	UO ₂ ²⁺	11.2	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	K ₂ 20C2-diene-1	H ⁺	13.0(1)	Pot			24	H ₂ O-Diox (1:1/v:v)	739, 740
		H ⁺	9.9(2)	Pot			24	H ₂ O-Diox (1:1/v:v)	739, 740
Mg ²⁺		7.2	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K-mol	T , °C	conditions ^c	ref
	Ca ²⁺	7.4	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Sr ²⁺	5.6	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Ba ²⁺	5.4	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Co ²⁺	9.7	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Cu ²⁺	12.1	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Zn ²⁺	9.5	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Cd ²⁺	7.4	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	Pb ²⁺	9.1	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
	UO ₂ ²⁺	12.5	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740
Spher-20C2-1	Li ⁺	4.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	5.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	6.43	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	5.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	6.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-B ₂ 20C2-1	Li ⁺	4.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	8.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	7.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	6.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	7.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	6.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-B ₂ 20C3-1	Li ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Na ⁺	8.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	K ⁺	8.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Rb ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Cs ⁺	7.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	NH ₄ ⁺	7.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	CH ₃ NH ₃ ⁺	6.63	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
Spher-PyB ₂ 20C3-1	Li ⁺	6.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Na ⁺	9.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	K ⁺	9.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Rb ⁺	7.92	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Cs ⁺	7.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	NH ₄ ⁺	7.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	CH ₃ NH ₃ ⁺	8.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
Spher-Py20C3-1	Li ⁺	4.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	Na ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475
	K ⁺	6.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475

Chart XL

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
Spher-Py20C3·2	Rb ⁺	6.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Cs ⁺	5.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	NH ₄ ⁺	6.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	CH ₃ NH ₃ ⁺	5.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Li ⁺	4.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Na ⁺	4.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	K ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Rb ⁺	4.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Cs ⁺	4.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
(Nap) ₂ 20C4-1	NH ₄ ⁺	4.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	CH ₃ NH ₃ ⁺	3.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	K ⁺	5.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Rb ⁺	5.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Cs ⁺	5.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	NH ₄ ⁺	5.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	CH ₃ NH ₃ ⁺	4.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	A ₄ 20C4-1	H ⁺	11.82(1)	Pot			20	H ₂ O, 0.1 M KNO ₃	220,221,456
		H ⁺	11.3(2)	Pot			20	H ₂ O, 0.1 M KNO ₃	220,221,456
H ⁺		10.63(3)	Pot			20	H ₂ O, 0.1 M KNO ₃	220,221,456	
H ⁺		8.87(4)	Pot			20	H ₂ O, 0.1 M KNO ₃	220,221,456	
H ⁺		11.65(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	742	
H ⁺		10.60(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	742	
H ⁺		8.34(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	742	
H ⁺		8.38(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	742	
Ag ⁺		5.7(1)	Pot			20	H ₂ O, 0.1 M KNO ₃	221	
Ag ⁺		2.6(2)	Pot			20	H ₂ O, 0.1 M KNO ₃	221	
Spher-A ₄ 20C4·1	Na ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	K ⁺	7.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
Spher-A ₄ 20C4·2	Li ⁺	8.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Na ⁺	11.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	K ⁺	9.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Rb ⁺	7.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Cs ⁺	7.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	NH ₄ ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	CH ₃ NH ₃ ⁺	7.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
	Spher-A ₄ 20C4·3	Li ⁺	8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
		Na ⁺	10.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
K ⁺		11.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
Rb ⁺		9.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
Cs ⁺		8.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
NH ₄ ⁺		9.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
CH ₃ NH ₃ ⁺		8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		7.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
Spher-A ₄ 20C4·4		Li ⁺	7.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
		Na ⁺	9.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	K ⁺	8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
Spher-A ₄ 20C4-5	Rb ⁺	7.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Cs ⁺	7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	NH ₄ ⁺	7.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	CH ₃ NH ₃ ⁺	6.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Li ⁺	9.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Na ⁺	12.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	K ⁺	10.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Rb ⁺	10.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Cs ⁺	9.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	NH ₄ ⁺	10.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	CH ₃ NH ₃ ⁺	10.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735	
(1,3-B) ₂ A ₄ 20C4·tetraene-1	Cu ²⁺	13.2 (Cu ₂ L)	Pot			25?	H ₂ O (anion = Cl ⁻) (2Cu ²⁺ + L)	743
	Cu ²⁺	>14 (Cu ₂ L)	Pot			25?	MeOH (anion = Cl ⁻) (2Cu ²⁺ + L)	743
	Cu ²⁺	12.7 (Cu ₂ L)	Pot			25?	MeOH (anion = ClO ₄ ⁻) (2Cu ²⁺ + L)	743
20C6-1	Na ⁺	1.6	Pot			25	MeOH	542
	K ⁺	2.6	Pot			25	MeOH	542
	Rb ⁺	2.3	Pot			25	MeOH	542
	Cs ⁺	1.9	Pot			25	MeOH	542
20C6-2	Na ⁺	<0.8	Pot			25	MeOH	542
	K ⁺	1.67	ISE			25	MeOH	466
	K ⁺	1.8	Pot			25	MeOH	542, 542a
	Rb ⁺	1.4	Pot			25	MeOH	542, 542a
Cs ⁺	0.8	Pot			25	MeOH	542, 542a	
Chart XLI								
20C6-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.28	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125
20C6-4	Li ⁺	4.3	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	Na ⁺	4.5	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	K ⁺	6.3	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	Rb ⁺	4.8	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	NH ₄ ⁺	5.1	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	CH ₃ NH ₃ ⁺	3.5	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.3	Solv Extr-UV (Pic Anal)			25?	CDCl ₃ (anion = picrate)	477
20C6-5	Li ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	Na ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	K ⁺	6.6	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	Rb ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	NH ₄ ⁺	5.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	CH ₃ NH ₃ ⁺	3.9	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
20C6-6	Li ⁺	4.7	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	Na ⁺	4.2	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	K ⁺	6.6	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	Rb ⁺	4.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	NH ₄ ⁺	4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	CH ₃ NH ₃ ⁺	3.9	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	477, 478

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
20C6-7	Li ⁺	4.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	Na ⁺	4.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	K ⁺	5.65	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	Rb ⁺	5.41	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	NH ₄ ⁺	5.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	CH ₃ NH ₃ ⁺	4.08	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
20C6-8	Li ⁺	4.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	Na ⁺	4.90	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	K ⁺	5.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	Rb ⁺	5.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	NH ₄ ⁺	5.68	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	CH ₃ NH ₃ ⁺	3.98	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	744
Cy ₂ 20C6-1	Li ⁺	4.89	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Na ⁺	5.20	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	K ⁺	6.68	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Rb ⁺	6.00	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Cs ⁺	4.94	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	NH ₄ ⁺	6.18	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	CH ₃ NH ₃ ⁺	4.72	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.64	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
Cy ₂ 20C6-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.86	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.74	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	745
	Li ⁺	5.08	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Na ⁺	5.83	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
Cy ₂ 20C6-3	K ⁺	7.20	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Rb ⁺	6.77	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Cs ⁺	5.87	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	NH ₄ ⁺	6.84	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	CH ₃ NH ₃ ⁺	5.46	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.59	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.11	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.87	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	745
Cy ₂ 20C6-3	Li ⁺	5.51	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Na ⁺	5.80	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	K ⁺	7.63	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Rb ⁺	7.51	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	Cs ⁺	6.92	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	NH ₄ ⁺	7.60	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	CH ₃ NH ₃ ⁺	6.34	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.53	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.30	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	745
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.79	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	745

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
Cy ₂ 20C6-4	Li ⁺	4.04	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Na ⁺	4.91	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	K ⁺	7.15	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Rb ⁺	6.28	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Cs ⁺	5.20	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	NH ₄ ⁺	6.49	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	CH ₃ NH ₃ ⁺	5.32	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.08	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.46	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	745	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.61	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	745		
Cy ₂ 20C6-5	Li ⁺	3.90	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Na ⁺	3.85	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	K ⁺	5.18	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Rb ⁺	4.46	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	Cs ⁺	3.48	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	NH ₄ ⁺	4.51	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
	CH ₃ NH ₃ ⁺	3.52	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.00	Solv Extr-UV (Pic Anal)			24	CDCl ₃ (anion = picrate)	745		
20C6-ene-1	Na ⁺	1.54	ISE			25	MeOH	479	
	K ⁺	2.72	ISE			25	MeOH	479	
K ₄ 20C6-1	Na ⁺	1.78	NMR			30	Py/Py·d ₅ (1:1), 0.07-0.17 M NaClO ₄	363	
B20C6-1	K ⁺	6.70	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206	
	Rb ⁺	5.88	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206	
	Cs ⁺	6.18	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.20	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371	
Chart XLII									
B20C6-2	Li ⁺	5.48	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Na ⁺	3.79	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	K ⁺	5.28	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Rb ⁺	5.04	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Cs ⁺	4.24	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
B20C6-3	Na ⁺	1.53	ISE			25	MeOH	479	
	K ⁺	2.15	ISE			25	MeOH	479	
B20C6-4	Na ⁺	1.54	ISE			25	MeOH	479	
	K ⁺	1.39	ISE			25	MeOH	479	
B20C6-5	Na ⁺	1.87	ISE			25	MeOH	479	
	K ⁺	2.28	ISE			25	MeOH	479	
B20C6-6	Na ⁺	1.71	ISE			25	MeOH	479	
	K ⁺	1.38	ISE			25	MeOH	479	
B20C6-7	Na ⁺	1.70	ISE			25	MeOH	479	
	K ⁺	2.20	ISE			25	MeOH	479	
B20C6-8	Na ⁺	1.74	ISE			25	MeOH	479	
	K ⁺	2.14	ISE			25	MeOH	479	
B20C6-9	Na ⁺	1.79	ISE			25	MeOH	479	
	K ⁺	2.19	ISE			25	MeOH	479	
B20C6-10	Na ⁺	1.32	ISE			25	MeOH	479	
	K ⁺	2.04	ISE			25	MeOH	479	
B20C6-11	Na ⁺	1.25	ISE			25	MeOH	479	
	K ⁺	2.00	ISE			25	MeOH	479	
B20C6-12	Na ⁺	1.75	ISE			25	MeOH	479	
	K ⁺	2.26	ISE			25	MeOH	479	
B20C6-13	Na ⁺	1.73	ISE			25	MeOH	479	
	K ⁺	2.25	ISE			25	MeOH	479	
B ₂ 20C6-1	K ⁺	5.88	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746	
	Rb ⁺	5.53	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746	
	Cs ⁺	5.38	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.40	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747	
B ₂ 20C6-2	Li ⁺	4.34	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	Na ⁺	5.22	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
	K ⁺	6.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Rb ⁺	5.27	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	4.71	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	5.50	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	CH ₃ NH ₃ ⁺	4.14	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.22	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
B ₂ 20C6-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.86	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-4	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.90	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.38	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-6	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.18	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-7	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.08	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-8	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.23	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-9	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.65	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
B ₂ 20C6-10	Li ⁺	4.51	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Na ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	K ⁺	7.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Rb ⁺	6.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Cs ⁺	5.51	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	NH ₄ ⁺	5.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	CH ₃ NH ₃ ⁺	4.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
B ₂ 20C6-11	Li ⁺	4.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Na ⁺	5.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	K ⁺	7.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Cs ⁺	5.42	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	NH ₄ ⁺	6.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	CH ₃ NH ₃ ⁺	5.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
B ₂ 20C6-12	Li ⁺	4.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Na ⁺	6.77	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	K ⁺	7.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Rb ⁺	6.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	Cs ⁺	5.97	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	NH ₄ ⁺	6.71	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	CH ₃ NH ₃ ⁺	5.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
B ₂ 20C6-13	Li ⁺	5.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	7.69	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	8.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Rb ⁺	6.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	5.49	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	NH ₄ ⁺	6.43	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	CH ₃ NH ₃ ⁺	5.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
(1,4-B)20C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<3.15	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<2.11	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388
(2,3-Nap)20C6-1	Na ⁺	1.88	NMR			25?	MeOD- <i>d</i> ₃	209
	K ⁺	2.98	NMR			25?	MeOD- <i>d</i> ₃	209
	Rb ⁺	2.74	NMR			25?	MeOD- <i>d</i> ₃	209

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
(Nap) ₂ 20C6-1	Cs ⁺	2.70	NMR			25?	MeOD-d ₃	209
	Li ⁺	3.51	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.00	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	6.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.41	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-2	NH ₄ ⁺	5.87	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	Na ⁺	6.24	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	K ⁺	7.63	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	Rb ⁺	6.67	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	Cs ⁺	5.76	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	NH ₄ ⁺	6.51	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476, 498
	CH ₃ NH ₃ ⁺	5.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.69	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	6.71	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	5.75	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.09	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-4	Li ⁺	5.03	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	7.06	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	7.72	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.93	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	6.21	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.85	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.62	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	5.94	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.39	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	5.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	4.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-6	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	5.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	6.84	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.03	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.26	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	5.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-7	CH ₃ NH ₃ ⁺	4.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.33	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.76	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.73	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	7.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-7	Rb ⁺	6.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
(Nap) ₂ 20C6-8	Cs ⁺	5.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	6.50	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	5.13	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.09	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	5.13	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	9.06	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	8.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	7.29	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-9	Cs ⁺	6.40	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	7.03	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	CH ₃ NH ₃ ⁺	5.98	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.03	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.64	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	7.67	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
(Nap) ₂ 20C6-10	Cs ⁺	6.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	6.65	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Li ⁺	4.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.45	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	7.79	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	6.75	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	5.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	6.65	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
Chart XLIII								
Fur20C6-1	K ⁺	6.70	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Rb ⁺	6.40	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Cs ⁺	6.41	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
Thio20C6-1	K ⁺	6.70	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Rb ⁺	6.11	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Cs ⁺	5.98	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
B ₂ A ₃ 20C6-1	H ⁺	9.09(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	748
	H ⁺	8.06(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	748
	H ⁺	3.62(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	748
	Ni ²⁺	11.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
	Zn ²⁺	9.3	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
	Cd ²⁺	8.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
Spher-A ₆ 20C6-1	Li ⁺	5.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Na ⁺	8.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	K ⁺	7.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Rb ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	Cs ⁺	5.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	NH ₄ ⁺	6.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	CH ₃ NH ₃ ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	735
Spher-A ₆ 20C6-2	Li ⁺	5.58(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	1.90(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	5.36(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	1.90(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	5.43(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
Spher-A ₆ 20C6-3	K ⁺	2.03(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	5.15(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	1.80(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	5.15(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	1.75(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	NH ₄ ⁺	5.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	CH ₃ NH ₃ ⁺	5.43	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	5.51(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	1.60(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	6.38(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	1.94(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	7.34(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	2.92(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	6.60(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	2.09(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	6.15(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	1.93(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Spher-A ₆ 20C6-4	NH ₄ ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)
CH ₃ NH ₄ ⁺		6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
<i>t</i> -C ₄ H ₉ NH ₃ ⁺		6.97	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
Li ⁺		9.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Na ⁺		11.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
K ⁺		11.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Rb ⁺		9.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Cs ⁺		10.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
NH ₄ ⁺		10.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
CH ₃ NH ₃ ⁺		10.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
Spher-A ₆ 20C6-6	Li ⁺	8.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	8.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	Na ⁺	10.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	11.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	K ⁺	11.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	11.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	Rb ⁺	10.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	10.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	Cs ⁺	9.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	9.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	NH ₄ ⁺	10.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	NH ₄ ⁺	10.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751
	CH ₃ NH ₃ ⁺	10.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	CH ₃ NH ₃ ⁺	10.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749, 751

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
Spher-A ₆ 20C6-7	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.65	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749,750,751
	Li ⁺	9.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Na ⁺	9.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	K ⁺	9.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Rb ⁺	9.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Cs ⁺	9.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-8	NH ₄ ⁺	9.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	CH ₃ NH ₃ ⁺	8.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Li ⁺	9.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Na ⁺	10.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	K ⁺	10.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Rb ⁺	10.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-9	Cs ⁺	9.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	NH ₄ ⁺	10.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	CH ₃ NH ₃ ⁺	9.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	8.65	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Li ⁺	9.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Na ⁺	9.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	K ⁺	10.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-10	Rb ⁺	9.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Cs ⁺	10.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	NH ₄ ⁺	9.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	CH ₃ NH ₃ ⁺	8.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Li ⁺	7.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Na ⁺	7.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-11	K ⁺	7.75	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Rb ⁺	7.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Cs ⁺	8.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	NH ₄ ⁺	7.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	CH ₃ NH ₃ ⁺	6.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.92	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Li ⁺	9.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-12	Na ⁺	10.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	K ⁺	9.90	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Rb ⁺	9.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Cs ⁺	9.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	NH ₄ ⁺	9.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	CH ₃ NH ₃ ⁺	8.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	8.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
Spher-A ₆ 20C6-12	Li ⁺	9.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749
	Na ⁺	10.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	749

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	$T, ^\circ\text{C}$	conditions ^c	ref
20C7-1	K ⁺	6.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	5.66	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	5.95	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	6.08	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Na ⁺	4.4	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	K ⁺	3.4	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	Rb ⁺	4.9	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	Cs ⁺	5.4	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	SrCl ⁺	1.6	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	BaCl ⁺	4.1	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
K ₂ Naphthyr20C7-1	Li ⁺	4.54	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Na ⁺	5.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	K ⁺	6.40	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Rb ⁺	6.33	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Cs ⁺	5.99	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Mg ²⁺	4.55	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ca ²⁺	4.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ba ²⁺	7.16	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Cu ²⁺	4.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Ag ⁺	7.13	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
NH ₄ ⁺	6.53	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
				Chart XLIV				
KA ₂ 20C7-1	Li ⁺	4.85	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Na ⁺	4.83	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	K ⁺	5.38	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	5.34	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	5.18	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	5.32	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
Spher-B ₂ A ₄ 20C7-1	Li ⁺	4.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Na ⁺	7.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	K ⁺	7.63	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Rb ⁺	7.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Cs ⁺	6.65	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	NH ₄ ⁺	6.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	CH ₃ NH ₃ ⁺	7.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
Spher-B ₂ A ₄ 20C7-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
Spher-PyB ₂ A ₄ 20C7-1 (Chart XL)	Li ⁺	5.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Na ⁺	7.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	K ⁺	6.89	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	Cs ⁺	5.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741
	NH ₄ ⁺	6.67	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	471
	CH ₃ NH ₃ ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
Spher-PyBzA ₄ 20C7-2 (Chart XL)	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	Na ⁺	8.73	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741, 751	
	K ⁺	8.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741, 751	
	CH ₃ NH ₃ ⁺	7.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741, 751	
Spher-PyBzA ₄ 20C7-3 (Chart XL)	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.92	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741, 751	
	Li ⁺	6.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	Na ⁺	7.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	K ⁺	7.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	Rb ⁺	6.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	Cs ⁺	6.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	NH ₄ ⁺	6.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	CH ₃ NH ₃ ⁺	7.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
20C8-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	741	
	Cs ⁺	3.47	NMR			-70	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.54	NMR			-60	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.56	NMR			-50	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.62	NMR			-40	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.67	NMR			-30	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.74	NMR			-20	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.80	NMR			-10	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.44	NMR			50	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	(1)	NMR	5.0	87.9	-70 to 50	Me ₂ CO- <i>d</i> ₆	752	
	Cs ⁺	3.32	NMR			50	NMe	752	
	Cs ⁺	2.45	Spec			25	PEG 200 (anion = Cl ⁻)	530	
	Cs ⁺	2.29	Spec			25	PEG 200 (anion = picrate)	530	
	H ⁺	1.0	Cal			25	H ₂ O	205	
Phos20C8-1 PhosB ₂ 20C8-1	Li ⁺	3.40	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Li ⁺	3.36	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Li ⁺	4.59	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Li ⁺	2.26	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	754	
	Li ⁺	~3.48	NMR			25	Me ₂ CO- <i>d</i> ₆	755	
	Na ⁺	4.23	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Na ⁺	>4.00	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Na ⁺	4.15	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Na ⁺	2.36	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	754	
	K ⁺	nm	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	K ⁺	3.43	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Rb ⁺	nm	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Cs ⁺	nm	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Mg ²⁺	3.11	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Mg ²⁺	3.87	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Mg ²⁺	~7.0(1+2)	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	754	
	Ca ²⁺	2.88	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Ca ²⁺	2.85	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Ca ²⁺	4.56	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Ca ²⁺	~7.0(1+2)	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	754	
	Sr ²⁺	2.64	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Sr ²⁺	2.76	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Ba ²⁺	2.60	Calc'd			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Ba ²⁺	2.71	Spec			23	DCE·THF (20:1/v:v), (anion = picrate)	753	
	Ba ²⁺	3.04	NMR			25?	Me ₂ CO- <i>d</i> ₆ (anion = ClO ₄ ⁻)	754	
	Spher-T21C1-1	Li ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
		Na ⁺	5.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
K ⁺		7.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
Rb ⁺		6.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
Cs ⁺		5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Spher-(TO ₂)21C1-1	NH ₄ ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	CH ₃ NH ₃ ⁺	4.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Li ⁺	4.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Na ⁺	6.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Cs ⁺	4.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
Spher-21C3-1	NH ₄ ⁺	5.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	CH ₃ NH ₃ ⁺	4.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Li ⁺	4.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	6.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	8.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	8.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	8.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-21C3-2	NH ₄ ⁺	7.82	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	7.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	4.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	5.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	7.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	7.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	7.53	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-Py21C3-1	CH ₃ NH ₃ ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	5.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	7.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	7.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	7.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	6.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	6.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-Py21C3-2	K ⁺	6.58	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	7.34	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	7.00	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	6.45	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	CH ₃ NH ₃ ⁺	5.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Spher-THF21C3-1	Li ⁺	6.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	6.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	8.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	8.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Spher-21C4-1	Cs ⁺	5.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	5.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	3.94	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Li ⁺	4.93	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 757
	Na ⁺	5.45	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 757
	K ⁺	7.97	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 757
	Rb ⁺	8.20	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 757
(Nap) ₂ 21C5-1	Cs ⁺	7.93	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	499, 757
	Li ⁺	3.85	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	4.18	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	5.38	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Rb ⁺	5.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
(Nap) ₂ 21C5-2	Cs ⁺	5.30	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	4.85	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Li ⁺	4.28	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	4.63	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	5.98	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
21C6-1	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	5.98	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	5.68	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Li ⁺	~4.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	Na ⁺	~4.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
(1,3-B)21C6-1	K ⁺	~6.4	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	Rb ⁺	~4.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	NH ₄ ⁺	~5.2	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	CH ₃ NH ₃ ⁺	~3.0	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~2.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	478
(1,3-B)21C6-2	K ⁺	6.70	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Rb ⁺	5.34	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
	Cs ⁺	5.48	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
(1,3-B)21C6-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.46	NMR			20	CDCl ₃ (anion = PF ₆ ⁻)	371
	H ⁺	3.8	Pot			22	H ₂ O	270, 272
(1,3-B)21C6-4	H ⁺	4.38	Pot			25	H ₂ O	123, 271
(1,3-B)21C6-5	H ⁺	10.5	Spec			20	H ₂ O	266
(1,3-B)21C6-6	H ⁺	6.5	Spec			20	H ₂ O	266
(1,3-B)21C6-7	H ⁺	6.9	Spec			25	Diox-H ₂ O (1:9)	88
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.48	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272
(1,3-B)21C6-8	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.97	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270
	Li ⁺	3.46	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Na ⁺	4.66	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	K ⁺	5.26	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
	Cs ⁺	5.81	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
(1,3-B)B ₂ 21C6-1	NH ₄ ⁺	5.11	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
(1,8-Nap)21C6-1	Li ⁺	nm	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ /MeOH (5:1/v:v), (anion = ClO ₄ ⁻)	515
	Na ⁺	4.07	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ /MeOH (5:1/v:v), (anion = ClO ₄ ⁻)	515
	Rb ⁺	4.69	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ /MeOH (5:1/v:v), (anion = ClO ₄ ⁻)	515
(1,8-Nap)21C6-2	Na ⁺	1.81	NMR			25?	MeOD- <i>d</i> ₃	209

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
(1,3-B) ₂ 21C6-1	K ⁺	2.18	NMR			25?	MeOD- <i>d</i> ₃	209
	Rb ⁺	2.85	NMR			25?	MeOD- <i>d</i> ₃	209
	Cs ⁺	2.30	NMR			25?	MeOD- <i>d</i> ₃	209
	H ⁺	10.16(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	H ⁺	9.01(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	H ⁺	7.49(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	Ni ²⁺	6.75	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	Cu ²⁺	12.77	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	Zn ²⁺	7.21	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
	Cd ²⁺	5.70	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758
Pb ²⁺	nm	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
Chart XLVI								
B ₂ A ₃ 21C6-1	Zn ²⁺	7.9	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
	Cd ²⁺	7.7	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
Spher-BA ₄ 21C6-1	Li ⁺	7.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	Na ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	K ⁺	9.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	Rb ⁺	8.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	Cs ⁺	8.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	NH ₄ ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	CH ₃ NH ₃ ⁺	7.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	8.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	506
Spher-(1,4-B) ₂ A ₃ 21C6-1	Li ⁺	4.40(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Li ⁺	1.71(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	4.32(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Na ⁺	1.68(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	5.28(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	K ⁺	1.76(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	5.43(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Rb ⁺	1.75(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	5.79(1)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	Cs ⁺	1.97(2)	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	NH ₄ ⁺	5.87	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	CH ₃ NH ₃ ⁺	6.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.67	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	737
21C7-1	H ⁺	>5	Cal	-29.1	3.425		MeCN	629
	Na ⁺	1.73	Cal	-43.4	-112	25	MeOH, <i>I</i> = 0.005	514
	Na ⁺	2.46	ISE			25	MeOH	308
	K ⁺	4.22	Cal	-35.9	-39.7	25	MeOH, <i>I</i> = 0.005	514
	Cs ⁺	3.19	NMR			25	DMAC	318
	Cs ⁺	3.61	NMR			25	DMF	318
	Cs ⁺	2.81	NMR			25	Form	318
	Cs ⁺	5.01	Cal	-46.8	-60.9	25	MeOH, <i>I</i> = 0.005	514
	Cs ⁺	2.5	NMR			25	NMF	318
	Sr ²⁺	1.77	Cal	-29.7	-65.8	25	MeOH, <i>I</i> = 0.005	514
	La ³⁺	7.61	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Pr ³⁺	7.30	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Nd ³⁺	7.55	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Sm ³⁺	7.46	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Eu ³⁺ , 3Fod ⁻	1.58	NMR			30	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	113
	Eu ³⁺	7.14	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Tb ³⁺	6.59	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Ho ³⁺	6.51	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Er ³⁺	6.10	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Tm ³⁺	6.25	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Lu ³⁺	5.78	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Ag ⁺	5.79	Pot			25	PC, 0.1 M Et ₄ NClO ₄	114, 115
	Tl ⁺	3.01	NMR	-36.1	59.4	25	DMF	299
	Tl ⁺	4.55	Cal	-40.1	-47.3	25	MeOH	331
	Pb ²⁺	3.76	Cal	-20.6	2.82	25	MeOH	331
	UO ₂ ²⁺	3.09	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333, 334
21C7-2	Na ⁺	2.16	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
21C7-3	Na ⁺	1.81	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
21C7-4	Na ⁺	1.89	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124
21C7-5	Na ⁺	2.00	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref
21C7-6	Na ⁺	1.88	ISE			25	99% MeOH, 0.01 M Me ₂ NOH	124
21C7-7	Na ⁺	2.34	ISE			25	MeOH	308
	K ⁺	3.27	ISE			25	MeOH	308
21C7-8	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.00	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	347
K21C7-1	Na ⁺	2.40	ISE			25	MeOH	348
	K ⁺	3.39	ISE			25	MeOH	348
K ₃ 21C7-1	Na ⁺	2.96	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	K ⁺	3.57	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
K ₃ 21C7-2	Na ⁺	2.89	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	K ⁺	2.92	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
Cy ₂ 21C7-1	Cs ⁺	>4(1)	NMR			25	DMAC	318
		2.2(2)	NMR			25	DMAC	318
	Cs ⁺	>4(1)	NMR			25	DMF	318
		3.1(2)	NMR			25	DMF	318
	Cs ⁺	2.4(1)	NMR			25	Form	318
		1.51(2)	NMR			25	Form	318
	Cs ⁺	>4(1)	NMR			25	NMF	318
		2.8(2)	NMR			25	NMF	318
B21C7-1	Li ⁺	5.60	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Li ⁺	none	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Na ⁺	5.36	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	none	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Na ⁺	2.61	Cond			30	PC	759
	K ⁺	6.81	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	1.94	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	K ⁺	3.10	Cond			30	PC	759
	Rb ⁺	7.37	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Rb ⁺	2.66	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Rb ⁺	3.27	Cond			30	PC	759
	Cs ⁺	7.21	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Cs ⁺	2.53	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352
	Cs ⁺	3.32	Cond			30	PC	759
B ₂ 21C7-1	H ⁺	4.02	Cal	-19.9	9.7	25	MeCN	629
	Na ⁺	2.88	Sol			25	MeCN	528
	K ⁺	5.15	Sol			25	<i>n</i> -BuOH	528
	K ⁺	2.40	Sol			25	DMF	528
	K ⁺	2.35	Pot			25	DMF	528
	K ⁺	4.47	Sol			25	MeCN	528
	K ⁺	4.29	Sol			25	Me ₂ CO	528
	K ⁺	4.19	Cal	-34.6	-35.9	25	MeOH	331
	K ⁺	4.38	Sol			25	PC	528
	K ⁺	5.23	Sol			25	<i>i</i> -PrOH	528
	Rb ⁺	4.4	Pot			25	MeOH	366
	Cs ⁺	2.76	NMR			25	DMAC	318
	Cs ⁺	2.84	NMR			25	DMF	318
	Cs ⁺	none	NMR			25	Form (insoluble ligand)	318
	Cs ⁺	2.94	NMR			22	84.4 mol% MeCN· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.34	NMR			22	66.9 mol% MeCN· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.99	NMR			22	47.4 mol% MeCN· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.70	NMR			22	25.2 mol% MeCN· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	3.92	NMR			22	MeCN, 0.01 M CsSCN	792a
	Cs ⁺	2.38	NMR			22	84.5 mol% Me ₂ CO· Me ₂ SO, 0.005 M CsSCN	792a
	Cs ⁺	1.99	NMR			22	69.2 mol% Me ₂ CO· Me ₂ SO, 0.005 M CsSCN	792a
	Cs ⁺	1.73	NMR			22	49.1 mol% Me ₂ CO· Me ₂ SO, 0.005 M CsSCN	792a
	Cs ⁺	1.44	NMR			22	24.2 mol% Me ₂ CO· Me ₂ SO, 0.005 M CsSCN	792a
	Cs ⁺	1.44	NMR			22	14.6 mol% Me ₂ CO· Me ₂ SO, 0.005 M CsSCN	792a
	Cs ⁺	3.12	NMR			22	79.4 mol% Me ₂ CO· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.71	NMR			22	59.1 mol% Me ₂ CO· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.44	NMR			22	39.1 mol% Me ₂ CO· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.23	NMR			22	19.4 mol% Me ₂ CO· Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.91	NMR			22	Me ₂ CO, 0.005 M CsSCN	792a
	Cs ⁺	4.04	NMR			22	Me ₂ CO, 0.01 M CsSCN	792a
	Cs ⁺	4.25	Cal	-44.10	-66.4	25	MeOH	331
	Cs ⁺	4.2	Pot			25	MeOH	366
	Cs ⁺	2.22	NMR			22	Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.44	NMR			22	Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.36	NMR			25	NMF	318
	Sr ²⁺	nm	Cal			25	MeOH	331
	Ba ²⁺	4.21	Cal	-21.1	9.73	25	MeOH	331

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref	
Py21C7-1	Ag ⁺	2.13	Pot			25	n-BuOH	528	
	Ag ⁺	1.63	Pot			25	DMF	528	
	Ag ⁺	2.93	Pot			25	Me ₂ CO	528	
	Ag ⁺	2.41	Cal	-7.61	20.6	25	MeOH	331	
	Ag ⁺	2.13	Pot			25	MeOH	528	
	Ag ⁺	4.27	Pot			25	PC	528	
	Tl ⁺	4.03	Cal	-36.9	-46.3	25	MeOH	331	
	Pb ²⁺	1.97	Cal	-15.1	-12.8	25	MeOH	331	
	H ⁺	4.16	Pot			25	H ₂ O	271	
	Li ⁺	<1	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Na ⁺	1.91	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	3.79	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	4.36	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	2.81	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
Py21C7-2	Ba ²⁺	5.37	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	H ⁺	4.16	Pot			25	H ₂ O, 0.1 M HCl	385, 386	
	H ⁺	~3.6	Pot			25	85.4 wt% EtOH·H ₂ O	386	
	H ⁺	~3.85	Pot			25	51.2 wt% MeOH·H ₂ O	386	
Py21C7-3	H ⁺	~5.5	Pot			25	MeOH	386	
	H ⁺	4.25	Pot			25	H ₂ O	271	
K ₂ Py21C7-1	Na ⁺	2.57	Cal	-36.9	-75	25	MeOH	387	
	K ⁺	3.60	Cal	-41.1	-69	25	MeOH	387	
	Rb ⁺	3.68	Cal	-44.8	-80	25	MeOH	387	
	Cs ⁺	3.76	Cal	-42.0	-69	25	MeOH	387	
	Sr ²⁺	2.75	Cal	-10.5	17	25	MeOH	387	
	Ba ²⁺	3.75	Cal	-24.7	-11	25	MeOH	387	
Chart XLVII									
Fur21C7-1	K ⁺	>6.70	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	K ₂ Fur21C7-1	NH ₄ ⁺	2.51	Cal	-20.5	-22.5	25	CHCl ₃ -MeOH (1:1/v:v)	514, 680
CH ₃ NH ₃ ⁺		1.76	Cal	-23.0	-43.5	25	CHCl ₃ -MeOH (1:1/v:v)	514, 680	
PhCH ₂ NH ₃ ⁺		1.36	Cal	-34.7	-89.9	25	CHCl ₃ -MeOH (1:1/v:v)	514, 680	
K ₂ THF21C7-1	K ⁺	3.03	Cal	-31.0	-46.3	25	MeOH, <i>I</i> = 0.005	514	
	Cs ⁺	2.64	Cal	-40.2	-84.2	25	MeOH, <i>I</i> = 0.005	514	
K ₂ Phen21C7-1	Li ⁺	6.76	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Na ⁺	6.56	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	K ⁺	6.91	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Rb ⁺	7.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Cs ⁺	6.99	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Mg ²⁺	5.02	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Ca ²⁺	6.74	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Ba ²⁺	7.45	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Cu ²⁺	6.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	Ag ⁺	6.59	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	NH ₄ ⁺	7.25	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
	A ₂ 21C7-1	Ca ²⁺	1.86	Pot	0(Cal)	10	25	MeOH, 0.05 M Et ₄ NNO ₃	412
		Ca ²⁺	2.5	Pot			25	MeOH	413
		Sr ²⁺	3.58	Cal	7.3	93	25	MeOH	412
Sr ²⁺		3.5	Pot			25	MeOH	413	
Ba ²⁺		5.39	Pot	-8.5(Cal)	74.2	25	MeOH, 0.05 M Et ₄ NClO ₄	412, 414	
Ba ²⁺		5.1	Pot			25	MeOH	413	
Co ²⁺		3.59	Cal	8.4	96.6	25	MeOH, 0.05 M Et ₄ NNO ₃	415	
Ni ²⁺		4.04	Cal	16.5	133	25	MeOH, (anion = NO ₃ ⁻)	415	
Cu ²⁺		>5	Pot	-65.8(Cal)		25	MeOH	416	
Ag ⁺		9.60	Pot	-53.4(Cal)	3.36	25	MeOH, 0.05 M Et ₄ NClO ₄	418	
Ag ⁺		9.29	Pot			25	MeOH	413	
Pb ²⁺		7.4	ISE			17	H ₂ O	706	
Pb ²⁺		7.94	ISE	-33.2(Cal)	40	25	MeOH, 0.05 M Et ₄ NClO ₄	419	
UO ₂ ²⁺		6.79(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333	
UO ₂ ²⁺	6.17(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333		
A ₂ 21C7-2	Ag ⁺	10.28	Pot	-61.1(Cal)	-10.1	25	MeOH, 0.05 M Et ₄ NClO ₄	418	
	K ₂ A ₂ 21C7-1	H ⁺	7.20(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		H ⁺	3.91(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		H ⁺	2.37(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		H ⁺	1.66(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		H ⁺	4.07(1)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
		H ⁺	3.40(2)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
		Ca ²⁺	4.96	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
		Sr ²⁺	4.06	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
		Ba ²⁺	4.00	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
		La ³⁺	8.35	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		Ce ³⁺	8.57	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		Pr ³⁺	8.85	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
		Nd ³⁺	9.04	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
Sm ³⁺	9.71	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150		
Eu ³⁺	9.89	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150		

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Gd ³⁺	10.04	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Td ³⁺	9.54	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Dy ³⁺	9.49	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Ho ³⁺	9.13	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Er ³⁺	9.08	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Tm ³⁺	8.94	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Tb ³⁺	9.01	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Lu ³⁺	8.93	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	150
	Co ²⁺	9.25	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Co ²⁺	3.98						
		(CoHL)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Ni ²⁺	9.22	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Ni ²⁺	3.81						
		(NiHL)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Cu ²⁺	9.56	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Cu ²⁺	3.79						
		(CuHL)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Zn ²⁺	10.33	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Zn ²⁺	3.85						
		(ZnHL)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Cd ²⁺	10.35	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	Cd ²⁺	3.96						
		(CdHL)	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
A ₄ 21C7-1	Hg ²⁺	3.99	Pot			30	H ₂ O, 0.1 M Me ₄ NBr	179
	H ⁺	11.09(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	9.04(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	5.10(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	2.70(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	16.7	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	11.5						
		(DyHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	5.2						
		(DyH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	18.1	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	13.4						
		(NiHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	7.4						
		(NiH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	17.0	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	12.6						
		(CoHL)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	6.9						
		(CoH ₂ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
A ₇ 21C7-1	H ⁺	9.76(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	9.28(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	8.63(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	6.42(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	3.73(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	2.13(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	2.0(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	9.83(1)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	9.53(2)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	8.84(3)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	6.72(4)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	4.04(5)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	2.43(6)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	2.30(7)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	H ⁺	10.12(1)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	9.24(2)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	8.18(3)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	6.20(4)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	3.76(5)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	1.96(6)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Mn ²⁺	9.79	Pot	-21.1	115	25	H ₂ O, 0.15 M NaClO ₄	764
	Co ²⁺	14.69	Pot			25	H ₂ O, 0.15 M NaClO ₄	765
	Co ²⁺	19.96	Pot			25	H ₂ O, 0.15 M NaClO ₄	765
		(CoHL)						
	Ni ²⁺	16.563	Pot			25	H ₂ O, 0.15 M NaClO ₄	766
	Ni ²⁺	23.172	Pot			25	H ₂ O, 0.15 M NaClO ₄	766
		(NiHL)						
	Cu ²⁺	24.4	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	Cu ²⁺	6.3						
		(Cu ₂ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄	761, 762
	Cu ²⁺	34.4	Pot			25	H ₂ O, 0.5 M NaClO ₄	762
		(CuH ₂ L)						
	Cu ²⁺	4.8	Pot			25	H ₂ O, 0.5 M NaClO ₄	762
		(Cu ₂ LOH)						
	Cu ²⁺	16.97				25	H ₂ O, 0.5 M NaClO ₄	761
		(Cu ₂ LOH)						
	Zn ²⁺	13.33	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	Zn ²⁺	20.2	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
		(ZnHL)						

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
K ₂ PhenT ₂ 21C7-1	Zn ²⁺	25.15 (ZnH ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + 2H ⁺)	724
	Zn ²⁺	1.5 (ZnLOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + H ₂ O)	724
	Zn ²⁺	17.54	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Zn ²⁺	23.50 (ZnHL)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Zn ²⁺ + L + H ⁺)	763
	Zn ²⁺	28.01 (ZnH ₂ L)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Zn ²⁺ + L + 2H ⁺)	763
	Cd ²⁺	18.10	Pot	-67.4(Cal)	121	25	H ₂ O, 0.15 M NaClO ₄	725
	Cd ²⁺	22.59 (CdHL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Cd ²⁺ + L + H ⁺)	725
	Li ⁺	3.27	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	Na ⁺	3.29	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
	K ⁺	4.31	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429
Rb ⁺	4.27	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Cs ⁺	4.21	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Mg ²⁺	3.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Ca ²⁺	4.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Ba ²⁺	4.01	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
Cu ²⁺	3.38	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
NH ₄ ⁺	4.13	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	429	
BT ₂ 21C8-1	Na ⁺	~1.48	Cond			30	PC	759
	K ⁺	2.26	Cond			30	PC	759
	Cs ⁺	2.51	Cond			30	PC	759
	Rb ⁺	2.46	Cond			30	PC	759
Spher-22C·diene-1	Li ⁺	5.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	Na ⁺	5.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	K ⁺	5.39	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	Rb ⁺	5.46	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	Cs ⁺	5.43	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	NH ₄ ⁺	5.21	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
	CH ₃ NH ₃ ⁺	5.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.19	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	767	
Spher-B ₃ 22C2-1	Li ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Na ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	K ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Rb ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	Cs ⁺	4.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	NH ₄ ⁺	3.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
	CH ₃ NH ₃ ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<4.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	738	
K ₄ (H ₂ Py) ₂ 22C4-1	Mg ²⁺	2.8	Cond			25	MeCN	505
	Chart XLVIII							
Spher-BA ₄ 22C4-1	Li ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	7.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	6.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	6.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
B ₂ 22C6-1	CH ₃ NH ₃ ⁺	5.67	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Hg ²⁺ , 2CF ₃ ⁻	4.30	NMR			22	Toluene-d ₈	768
B ₂ 22C6-2	Hg ²⁺ , 2CF ₃ ⁻	2.65	NMR			22	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	768
	Hg ²⁺ , 2CF ₃ ⁻	4.08	NMR	-63.2	-136	22	Toluene-d ₈	768
(H ₄ Nap) ₄ 22C6-1	Hg ²⁺ , 2CF ₃ ⁻	2.18	NMR	-44.4	-108	22	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	768
	K ⁺	4.26	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
Py ₂ 22C6-1	NH ₄ ⁺	4.08	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Li ⁺	6.0	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
	Na ⁺	6.0	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
	K ⁺	5.5	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
	NH ₄ ⁺	6.0	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
	Rb ⁺	6.2	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
	Cs ⁺	6.6	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	454
Py ₂ 22C6-2	Hg ²⁺ , 2CF ₃ ⁻	4.61	NMR			22	Toluene-d ₈	768
	Hg ²⁺ , 2CF ₃ ⁻	2.85	NMR			22	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	768
Py ₂ 22C6-3	Hg ²⁺ , 2CF ₃ ⁻	2.45	NMR			22	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	768
B ₂ A ₃ 22C6-1	Hg ²⁺ , 2CF ₃ ⁻	2.49	NMR	-43.5	-99.6	22	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	768
Py ₂ A ₄ 22C6-1	Zn ²⁺	7.4	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
	Cd ²⁺	5.8	Pot			25	95% MeOH, 0.1 M Et ₄ NClO ₄	483a
	H ⁺	9.11(1)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	H ⁺	8.32(2)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	H ⁺	7.12(3)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	H ⁺	3.72(4)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Co ²⁺	7.36	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Co ²⁺	-0.74	Pot			25	H ₂ O, 0.01 M NaClO ₄ , (Co ²⁺ + L + H ₂ O)	769
	Ni ³⁺	9.40	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Ni ²⁺	3.38	Pot			25	H ₂ O, 0.01 M NaClO ₄ , (Ni ²⁺ + L + H ₂ O)	769
	Cu ²⁺	12.83	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Cu ²⁺	5.73						
	Cu ²⁺	(Cu ₂ L)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Cu ²⁺	13.41	Spec			25	H ₂ O, 0.01 M NaClO ₄	769
	Cu ²⁺	5.67						
	Cu ²⁺	(Cu ₂ L)	Spec			25	H ₂ O, 0.01 M NaClO ₄	769
	Ag ⁺	6.28	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Ag ⁺	4.6						
	Ag ⁺	(Ag ₂ L)	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Zn ²⁺	6.92	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Zn ²⁺	-0.41	Pot			25	H ₂ O, 0.01 M NaClO ₄ , (Zn ²⁺ + L + H ₂ O)	769
	Cd ²⁺	7.86	Pot			25	H ₂ O, 0.01 M NaClO ₄	769
	Cd ²⁺	0.35	Pot			25	H ₂ O, 0.01 M NaClO ₄ , (Cd ²⁺ + L + H ₂ O)	769
Pb ²⁺	6.61	Pot			25	H ₂ O, 0.01 M NaClO ₄	769	
Pb ²⁺	-1.46	Pot			25	H ₂ O, 0.01 M NaClO ₄ , (Pb ²⁺ + L + H ₂ O)	769	
A ₆ 22C6-1	H ⁺	10.64(1)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	10.12(2)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	9.37(3)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	8.86(4)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	3.44(5)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	3.42(6)	Pot			25	H ₂ O, 0.5 M KCl	770
	Cu ²⁺	16.65	Pot			25	H ₂ O, 0.5 M KCl	770
	Cu ²⁺	9.25	Pot			25	H ₂ O, 0.5 M KCl (CuL ² + H ⁺)	770
	Cu ²⁺	8.57	Pot			25	H ₂ O, 0.5 M KCl (CuHL ³⁺ + H ⁺)	770
	Cu ²⁺	3.51	Pot			25	H ₂ O, 0.5 M KCl (CuH ₂ L ⁴⁺ + H ⁺)	770
	Cu ²⁺	11.47						
	Cu ²⁺	(Cu ₂ L)	Pot			25	H ₂ O, 0.5 M KCl	770
	(Phos) ₂ B ₄ 22C6-1	Li ⁺	4.90	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)
(Phos) ₂ B ₄ 22C6-1	Na ⁺	5.01	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	K ⁺	4.70	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	4.18	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	3.88	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	4.51	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
Spher-(1,5-B)A ₆ 22C6-1	Li ⁺	8.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	Na ⁺	9.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	10.41	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	Rb ⁺	8.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	Cs ⁺	7.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	NH ₄ ⁺	8.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	CH ₃ NH ₃ ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
Spher-(1,5-B)A ₆ 22C6-2	CH ₃ NH ₃ ⁺	10.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
Spher-(1,5-B)A ₆ 22C6-3	Na ⁺	11.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	Rb ⁺	9.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
	CH ₃ NH ₃ ⁺	9.61	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	771
Chart XLIX								
(1,3-B)22C7-1	Ag ⁺	5.99	Spec			25?	MeOH (anion = ClO ₄ ⁻)	471
A ₄ 22C8-1	CH ₃ NH ₃ ⁺	0.95	Cal	-58.9	-178.9	25	MeOH·H ₂ O (9:1/v:v)	204
A ₃ 23C3-1	UO ₂ ²⁺	20.7	Spec			25?	H ₂ O, pH 7-12	772
Spher-A ₄ 23C4-1	Li ⁺	4.77	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Na ⁺	4.92	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	K ⁺	6.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Rb ⁺	5.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	Cs ⁺	5.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	NH ₄ ⁺	5.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	CH ₃ NH ₃ ⁺	4.99	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
23C7-ene-1	Na ⁺	1.64	ISE			25	MeOH	479
	K ⁺	2.85	ISE			25	MeOH	479
23C7-ene-2	Na ⁺	1.18	ISE			25	MeOH	479
	K ⁺	2.9	ISE			25	MeOH	479
23C7-ene-3	Na ⁺	<0.6	ISE			25	MeOH	479
	K ⁺	3.03	ISE			25	MeOH	479
B ₂ 3C7-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
B ₂ 23C7-1	K ⁺	5.61	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746
	Rb ⁺	5.64	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746
	Cs ⁺	5.95	Sol-NMR			25	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	746
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.88	NMR			25	CDCl ₃ (anion = PF ₆ ⁻)	747
(Nap) ₂ 23C7-1	Li ⁺	5.51	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Na ⁺	6.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	K ⁺	8.76	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Rb ⁺	9.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	Cs ⁺	7.37	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
	NH ₄ ⁺	8.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	476
Fur23C7-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
Thio23C7-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ⁻)	206
PhosB ₂ 23C7-1	Li ⁺	4.61	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Na ⁺	5.07	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	K ⁺	5.98	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Rb ⁺	6.02	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	Cs ⁺	6.28	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
	NH ₄ ⁺	5.86	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	676
23C8-1	K ⁺	1.6	Spec			25	Diox-H ₂ O (6:4/v:v) (anion = Cl ⁻)	86

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
PhosB ₂ 23C9-1	Rb ⁺	3.8	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	Cs ⁺	4.8	Spec			25	Diox·H ₂ O (6:4/v:v) (anion = Cl ⁻)	86
	Ca ²⁺	3.29(1)	Cal	-9.3	31.8	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	1.71(2)	Cal	-6.7	8.2	25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	2.32(1)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	1.92(2)	Spec			25	MeCN (anion = SCN ⁻)	133
	Ca ²⁺	3.24(1)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
	Ca ²⁺	2.07(2)	Spec			25	MeCN (anion = ClO ₄ ⁻)	133
Chart L								
Calix6-24C-1	Mg ²⁺	nm	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Ni ²⁺	2.2	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Cu ²⁺	8.6	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Zn ²⁺	5.5	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	UO ₂ ²⁺	19.2	Spec			25	H ₂ O, pH 10.4 (0.01 M carbonate)	443, 444
	UO ₂ ²⁺	19.2	Spec			30	H ₂ O	445
	(CH ₃) ₃ N ⁺ Ph	2.74	NMR	-1.05	49.0	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	443, 447
	cation-5'	3.00	NMR	-0.63	55.6	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	447
Calix6-24C-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.57, 5.90	Spec			25?	MeCN	448
	<i>t</i> -C ₄ H ₉ CH ₂ NH ₃ ⁺	5.90	Spec			25?	MeCN	448
Calix6-24C-3	UO ₂ ²⁺	3.2	Spec			25	H ₂ O, pH 6.5	443, 444
	UO ₂ ²⁺	3.2	Spec			30	H ₂ O	445
	PhN ₂ ⁺	~2.00	Kin			30	H ₂ O	773
Calix6-24C-5		2.88	Spec			30	H ₂ O, pH 9 (0.2 M borate buffer)	774
Calix6-24C-6	Mg ²⁺	nm	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Ni ²⁺	3.2	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Ni ²⁺	5.7	Polg			25?	H ₂ O	441
	Cu ²⁺	6.7	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	441,444,445
	Cu ²⁺	3.96	Spec			25	H ₂ O, pH 9.5	775
	Zn ²⁺	5.6	Polg			25	H ₂ O, 0.1 M KCl, pH 9.5 (0.02 M NH ₄ ⁺)	443,444,445
	Zn ²⁺	6.2	Polg			25?	H ₂ O	441
	UO ₂ ²⁺	18.7	Spec			25	H ₂ O, pH 10.4 (0.01 M carbonate)	443,444,775
	UO ₂ ²⁺	18.7	Spec			30	H ₂ O	445
	(CH ₃) ₃ N ⁺ Ph	2.74	NMR	-1.05	49.0	25	D ₂ O, pD 7.3 (0.1 M PO ₄ ³⁻)	446
Calix6-24C-7	Li ⁺	3.7	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450
	Li ⁺	2.78	Spec			30	THF (anion = picrate)	451
	Na ⁺	3.5	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450
	Na ⁺	3.15	Spec			30	THF (anion = picrate)	451
	K ⁺	5.1	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450
	K ⁺	4.13	Spec			30	THF (anion = picrate)	451
	Rb ⁺	4.8	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450
	Cs ⁺	4.3	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	449, 450
	Cs ⁺	4.52	Spec			30	THF (anion = picrate)	451
	Ag ⁺	4.2	Spec			25	MeCN, 0.02 M Et ₄ NClO ₄	450
	cation-4'	4.22	Spec			40	C ₂ H ₂ Cl ₄ (anion = BF ₄ ⁻)	372
Calix6-24C-8	PhN ₂ ⁺	6.62	Kin			30	H ₂ O	773
Calix6-24C-9	PhN ₂ ⁺	4.75	Kin			30	H ₂ O	773
Spher-24C-1	Li ⁺	5.05	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	Na ⁺	6.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	K ⁺	5.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	Rb ⁺	6.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	Cs ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	NH ₄ ⁺	6.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	CH ₃ NH ₃ ⁺	5.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.05	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
Spher-24C-2	Li ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	Na ⁺	7.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	K ⁺	6.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776
	Rb ⁺	7.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
Spher-24C·3	Cs ⁺	10.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776	
	NH ₄ ⁺	6.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776	
	CH ₃ NH ₃ ⁺	6.59	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	776	
	Li ⁺	7.79	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Na ⁺	9.96	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	K ⁺	10.40	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Rb ⁺	9.28	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Cs ⁺	8.66	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	NH ₄ ⁺	8.63	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
Chrom-24C·1	CH ₃ NH ₃ ⁺	8.20	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.32	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	H ⁺	11.5(1)	Spec			25	H ₂ O	778	
	H ⁺	10.5(2)	Spec			25	H ₂ O	778	
	H ⁺	8.8(3)	Spec			25	H ₂ O	778	
	H ⁺	6.5(4)	Spec			25	H ₂ O	778	
	Mg ²⁺	2.5	Spec			25	H ₂ O (anion = SO ₄ ²⁻)	779	
	Mg ²⁺	3.93	Spec	9.6	106.3	25	MeOH (anion = SO ₄ ²⁻)	779	
	Fe ²⁺	3.52	Spec	0	67.4	25	H ₂ O	779	
	Fe ²⁺	3.49	Spec	17.2	124.3	25	MeOH	779	
Spher-24C2·1	Co ²⁺	3.17	Spec	10.5	95.4	25	H ₂ O	779	
	Co ²⁺	4.21	Spec	16.3	135.1	25	MeOH	779	
	Ni ²⁺	3.08	Spec	10.0	92.9	25	H ₂ O (anion = SO ₄ ²⁻)	779	
	Ni ²⁺	8.08(1+2)	Spec	23.0	232.6	25	MeOH (Ni ²⁺ + 2L) (anion = SO ₄ ²⁻)	779	
	Ni ²⁺	8.13(1+2)	Spec			29	MeOH (Ni ²⁺ + 2L) (anion = SO ₄ ²⁻)	779	
	Cu ²⁺	3.61	Spec	12.6	110.5	25	H ₂ O	779	
	Cu ²⁺	3.96	Spec	24.3	157.3	25	MeOH	779	
	Zn ²⁺	2.94	Spec	19.7	122.2	25	H ₂ O (anion = SO ₄ ²⁻)	779	
	Zn ²⁺	4.35	Spec	6.7	105.4	25	MeOH (anion = SO ₄ ²⁻)	779	
	Zn ²⁺	4.37	Spec			29	MeOH (anion = SO ₄ ²⁻)	779	
(1,3-B) ₂ 24C6·1	Li ⁺	4.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Na ⁺	5.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	K ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Rb ⁺	5.75	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	Cs ⁺	6.81	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	NH ₄ ⁺	5.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	CH ₃ NH ₃ ⁺	4.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	475	
	piperazine ⁺	6.36	NMR			25	CHCl ₃	780	
	piperidine ⁺	3.52(1+2)	NMR			25	CHCl ₃	780	
	(1,3-B) ₂ 24C6·2	Li ⁺	2.75	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269
Na ⁺		3.70	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
K ⁺		3.94	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
Rb ⁺		3.77	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
Cs ⁺		3.79	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
NH ₄ ⁺		3.93	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	269	
H ⁺		8.00(1)	Pot			22	Me ₂ SO·H ₂ O (65:35/v:v)	512	
H ⁺		6.30(2)	Pot			22	Me ₂ SO·H ₂ O (65:35/v:v)	512	
(1,5-Nap) ₂ 24C6·1		K ⁺	1.0	NMR			25?	MeOD- <i>d</i> ₃	209
		Rb ⁺	2.30	NMR			25?	MeOD- <i>d</i> ₃	209
(Nap) ₂ 24C6·1	Cs ⁺	2.48	NMR			25?	MeOD- <i>d</i> ₃	209	
	Li ⁺	3.69	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	4.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	5.02	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Rb ⁺	5.08	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Cs ⁺	5.34	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref	
(Nap) ₂ 24C6-2	NH ₄ ⁺	4.71	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Li ⁺	4.11	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	4.52	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	5.36	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Rb ⁺	5.43	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Cs ⁺	5.56	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
K ₄ Py ₂ 24C6-1	NH ₄ ⁺	5.04	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Eu ³⁺ , 3Fod ⁻	1.85	NMR			25?	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	89	
K ₂ 24C6-diene-1	H ⁺	11.5(1)	Pot			24	H ₂ O-Diox (1:1/v:v)	739, 740	
	H ⁺	8.6(2)	Pot			24	H ₂ O-Diox (1:1/v:v)	739, 740	
	Mg ²⁺	7.4	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Ca ²⁺	7.8	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Sr ²⁺	6.7	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Ba ²⁺	6.4	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Mn ²⁺	7.6	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Co ²⁺	9.9	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Ni ²⁺	10.8	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Cu ²⁺	11.3	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Zn ²⁺	9.7	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	Cd ²⁺	7.9	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	UO ₂ ²⁺	11.0	Pot			24	H ₂ O-Diox (1:1/v:v), (anion = NO ₃ ⁻)	739, 740	
	A ₉ 24C6-1	H ⁺	10.45(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782
H ⁺		10.35(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782	
H ⁺		9.05(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782	
H ⁺		7.90(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782	
H ⁺		7.15(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782	
H ⁺		6.60(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 782	
H ⁺		10.50(1)	Pot			25	H ₂ O, 0.1 M TsONa	782, 783	
H ⁺		10.20(2)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		9.25(3)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		8.00(4)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		7.05(5)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		6.40(6)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		10.50(1)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
H ⁺		10.20(2)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
H ⁺		9.25(3)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
H ⁺		8.00(4)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
H ⁺		7.05(5)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
H ⁺		6.40(6)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
(1,3-B) ₂ A ₉ 24C6-1		H ⁺	9.49(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		H ⁺	8.73(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		H ⁺	8.03(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		H ⁺	7.29(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		H ⁺	3.64(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		H ⁺	3.45(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		Cu ²⁺	13.79	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		Cu ²⁺	9.68						
		Cu ²⁺	(Cu ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	784
		Cu ²⁺	8.69	Pot			25	H ₂ O, 0.1 M KNO ₃	
	Cu ²⁺	(CuHL)					(CuHL ³⁺ + H ₊)	784	
	Cu ²⁺	7.32	Pot			25	H ₂ O, 0.1 M KNO ₃		
	Cu ²⁺	(CuH ₂ L)					(CuHL ³⁺ + H ₊)	784	
	(1,3-B)24C7-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206
Rb ⁺		>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
Cs ⁺		>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
(1,3-B)24C7-2	H ⁺	4.06	Pot			25	H ₂ O	123, 271	
	H ⁺	6.8	Spec			25	Diox-H ₂ O (1:9)	88	
24C8-1	Na ⁺	2.20	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124	
24C8-2	Na ⁺	2.18	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124	
24C8-3	Na ⁺	2.15	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124	
24C8-4	Na ⁺	2.17	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
24C8-5	Na ⁺	2.12	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	124	
24C8-6	H ⁺	5.89	Pot			25	52.1 wt% MeOH-H ₂ O	599	
24C8-7	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.70	Solv Extr-NMR (SCN ⁻ Anal)			25	CDCl ₃ (anion = SCN ⁻)	125	
24C8-8	Li ⁺	<2.0	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519	

Chart LI

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
24C8-9	Na ⁺	2.60	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	2.70	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	<1.9	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	<1.9	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Sr ²⁺	<1.9	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Ba ²⁺	3.15	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Pb ²⁺	<1.9	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Li ⁺	<1.6	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Na ⁺	2.85	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	3.20	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	2.90	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	2.10	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Sr ²⁺	2.6	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Ba ²⁺	3.30	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	Pb ²⁺	2.3	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
	24C8-diene-1	Na ⁺	3.00	Solv Extr			25	H ₂ O
Na ⁺		3.20	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
K ⁺		3.45	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
Rb ⁺		3.40	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
Cs ⁺		2.90	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
Ba ²⁺		4.1	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
Pb ²⁺		2.6	Polg			25	MeOH·C ₆ H ₆ (8:2v:v), 0.025 M Bu ₄ NClO ₄	519
24C8-diene-2	Na ⁺	3.97	Solv Extr			25?	DCE	785a
	K ₂ 24C8-1	1.86	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
K ₂ 24C8-2	K ⁺	1.98	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	Na ⁺	1.76	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
B24C8-1	K ⁺	1.73	Polg			25	EtOH, 0.025 M Bu ₄ NI	297
	Li ⁺	5.52	Polg			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	5.42	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	5.96	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Rb ⁺	5.91	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
B ₂ 24C8-1	Cs ⁺	6.24	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	H ⁺	4.03	Cal	-27.3	-14.8	25	MeCN (anion = CF ₃ SO ₃ ⁻)	93
	Li ⁺	<0.5	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Na ⁺	3.56	Cond			15	MeCN (anion = BPh ₄ ⁻)	786
	Na ⁺	3.45	Cond			20	MeCN (anion = BPh ₄ ⁻)	786
	Na ⁺	3.36	Cond	-34	-48	25	MeCN (anion = BPh ₄ ⁻)	786
	Na ⁺	3.34	Cond			30	MeCN (anion = BPh ₄ ⁻)	786
	Na ⁺	3.11	Cond			35	MeCN (anion = BPh ₄ ⁻)	786
	Na ⁺	4.12	Cond	-34.9	-160	25	MeCN	787, 788
	Na ⁺	3.89	Sol			25	MeCN	528
	Na ⁺	3.0	Polg			25	MeOH·C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Na ⁺	2.35	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Na ⁺	7.59	Solv Extr- CyVolt			?	NBnz	
	Na ⁺	6.00	NMR			25	NMe (anion = BF ₄ ⁻)	544
	Na ⁺	-0.18	NMR			25	NMe (anion = BF ₄ ⁻)	789
	Na ⁺	2.06	NMR			25	NMe (anion = BF ₄ ⁻)	789
	Na ⁺	(Na ₂ L)	NMR			21	NMe (anion = SCN ⁻)	790
	Na ⁺	4.16	Cond	-37.7	-46.0	25	PC	791
	K ⁺	4.96	Sol			25	n-BuOH	528
	K ⁺	1.80	Pot			25	DMF	528
K ⁺	1.32	Sol			25	DMF	528	
K ⁺	4.03	Cond			15	MeCN (anion = BPh ₄ ⁻)	786	
K ⁺	3.87	Cond			20	MeCN (anion = BPh ₄ ⁻)	786	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	3.86	Cond	-24	-8	25	MeCN (anion = BPh ₄ ⁻)	786
	K ⁺	3.81	Cond			30	MeCN (anion = BPh ₄ ⁻)	786
	K ⁺	3.70	Cond			35	MeCN (anion = BPh ₄ ⁻)	786
	K ⁺	3.84	Cond	-27.7	-77.2	25	MeCN	787, 788
	K ⁺	3.98	Sol			25	MeCN	528
	K ⁺	3.68	Sol			25	Me ₂ CO	528
	K ⁺	3.65	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	K ⁺	3.45	Cal	-31.1	-49.3	25	MeOH	331
	K ⁺	3.57	Cond	-35.3	-49.4	25	MeOH	791
	K ⁺	6.75	Solv Extr. CyVolt			?	NBnz	
	K ⁺	3.73	Cond	-34.5	-44.4	25	PC	544
	K ⁺	3.71	Sol			25	PC	791
	K ⁺	5.10	Sol			25	<i>i</i> -PrOH	528
	Rb ⁺	1.90	Pot			25	DMF	528
	Rb ⁺	4.43	Cond			15	MeCN (anion = BPh ₄ ⁻)	786
	Rb ⁺	4.24	Cond			20	MeCN (anion = BPh ₄ ⁻)	786
	Rb ⁺	4.19	Cond	-58	-116	25	MeCN (anion = BPh ₄ ⁻)	786
	Rb ⁺	3.91	Cond			30	MeCN (anion = BPh ₄ ⁻)	786
	Rb ⁺	3.74	Cond			35	MeCN (anion = BPh ₄ ⁻)	786
	Rb ⁺	3.80	Cond	-30.7	-118	25	MeCN	787, 788
	Rb ⁺	3.80	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Rb ⁺	3.86	Cond	-39.4	-57.7	25	MeOH	791
	Rb ⁺	3.76	Polg			25	MeOH, 0.1 M Me ₄ NI	367
	Rb ⁺	3.83	Polg			25	MeOH, 0.1 M Et ₄ NI	362
	Rb ⁺	1.26	Pot			25	Me ₂ SO	528
	Rb ⁺	6.20	Solv Extr. CyVolt			?	NBnz	
	Rb ⁺	3.55	Cond	-32.9	-42.3	25	PC	544
	Cs ⁺	2.08	NMR			25	DMAC	791
	Cs ⁺	3.59	NMR			0	22.69 mol% DMF·MeCN	318
	Cs ⁺	3.35	NMR			10	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.18	NMR			20	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.03	NMR			30	22.69 mol% DMF·MeCN	792
	Cs ⁺	2.85	NMR			40	22.69 mol% DMF·MeCN	792
	Cs ⁺	2.68	NMR			50	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.11	NMR			-10	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.98	NMR			0	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.78	NMR			10	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.54	NMR			20	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.44	NMR			30	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.29	NMR			40	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.65	NMR			0	DMF	792
	Cs ⁺	2.46	NMR			10	DMF	792
	Cs ⁺	2.32	NMR			20	DMF	792
	Cs ⁺	2.15	NMR			30	DMF	792
	Cs ⁺	2.02	NMR			40	DMF	792
	Cs ⁺	1.89	NMR			50	DMF	792
	Cs ⁺	2.10	NMR			25	DMF	318
	Cs ⁺	2.77	Pot			25	DMF	528
	Cs ⁺	none	NMR			25	Form (insoluble ligand)	318
	Cs ⁺	1.32	NMR			22	62.1 mol% HMPPT, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.41	NMR			22	38.0 mol% HMPPT, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.23	NMR			22	HMPPT, 0.01 M CsSCN	792a
	Cs ⁺	3.95	Cond	-33.1	-150	25	MeCN	787, 788
	Cs ⁺	4.11	Cond			15	MeCN (anion = BPh ₄ ⁻)	786
	Cs ⁺	4.03	Cond			20	MeCN (anion = BPh ₄ ⁻)	786
	Cs ⁺	3.94	Cond	-34	-39	25	MeCN (anion = BPh ₄ ⁻)	786
	Cs ⁺	3.81	Cond			30	MeCN (anion = BPh ₄ ⁻)	786
	Cs ⁺	3.72	Cond			35	MeCN (anion = BPh ₄ ⁻)	786
	Cs ⁺	4.50	NMR			5	MeCN	792
	Cs ⁺	3.94	NMR			30	MeCN	792
	Cs ⁺	3.77	NMR			40	MeCN	792
	Cs ⁺	3.57	NMR			50	MeCN	792
	Cs ⁺	3.45	NMR			60	MeCN	792
	Cs ⁺	3.19	NMR			75	MeCN	792
	Cs ⁺	3.70	Polg			25	MeOH-C ₆ H ₆ (8:2/v:v), 0.025 M Bu ₄ NClO ₄	519
	Cs ⁺	3.85	Cal	-37.9	-53.4	25	MeOH	331
	Cs ⁺	3.84	Cond	-36.8	-49.0	25	MeOH	791
	Cs ⁺	1.77	Pot			25	Me ₂ SO	528
	Cs ⁺	1.44	NMR			22	Me ₂ SO, 0.007 M CsSCN	792a
	Cs ⁺	1.64	NMR			22	Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.74	NMR			22	77.1 mol% PC, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.31	NMR			22	55.8 mol% PC, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.97	NMR			22	36.0 mol% PC, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	1.80	NMR			22	17.4 mol% PC, Me ₂ SO, 0.01 M CsSCN	792a
	Cs ⁺	2.24	NMR			25	NMF	318
	Cs ⁺	3.37	NMR			22	PC, 0.01 M CsSCN	792a
	Cs ⁺	3.46	Cond	-32.3	-42.3	25	PC	791

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
Py24C8-1	H ⁺	3.95	Pot			25	H ₂ O	271
	Li ⁺	<1	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Na ⁺	2.27	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	2.89	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	3.25	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	3.28	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ²⁺	2.91	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
Py24C8-2	H ⁺	3.95	Pot			25	H ₂ O, 0.1 M HCl	385, 386
	H ⁺	~3.3	Pot			25	85.4 wt% EtOH·H ₂ O	386
	H ⁺	~3.75	Pot			25	51.2 wt% MeOH·H ₂ O	386
	H ⁺	~5.3	Pot			25	MeOH	386
Py24C8-3	H ⁺	3.97	Pot			25	H ₂ O	271
K ₂ Py24C8-1	Na ⁺	2.09	Cal	-32.7	.70	25	MeOH	387
	K ⁺	2.82	Cal	-38.5	.75	25	MeOH	387
	Rb ⁺	3.14	Cal	-38.9	.71	25	MeOH	387
	Cs ⁺	3.41	Cal	-40.7	.72	25	MeOH	387
	Sr ²⁺	2.55	Cal	-18.1	.12	25	MeOH	387
	Ba ²⁺	3.74	Cal	-45.9	.83	25	MeOH	387
Py ₄ 24C8-1	H ⁺	4.8(1)	Pot			20	H ₂ O	136
	H ⁺	>3(2)	Pot			20	H ₂ O	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.49	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	136
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.84	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	136
K ₂ Fur24C8-1	NH ₄ ⁺	1.29	Cal	-11.7	-14.0	25	CHCl ₃ ·MeOH (1:1/v:v)	514, 680
	CH ₃ NH ₃ ⁺	1.60	Cal	-17.6	.28.1	25	CHCl ₃ ·MeOH (1:1/v:v)	514, 680
	PhCH ₂ NH ₃ ⁺	1.40	Cal	-42.7	-117	25	CHCl ₃ ·MeOH (1:1/v:v)	514, 780
K ₄ A ₂ 24C8-1	K ⁺	4.51	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	795
K ₄ A ₂ 24C8-2	K ⁺	4.81	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	795
	Rb ⁺	3.85	Solv Extr-UV (Pic Anal)			25?	CHCl ₃ (anion = picrate)	795
A ₄ 24C8-1	H ⁺	11.50(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	9.11(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	5.17(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	2.69(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	18.0	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	11.4						
	(DyHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	16.2	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	12.0						
	(CoHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	6.8						
	(CoH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	17.6	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	13.2						
	(NiHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
Ni ²⁺	7.6							
(NiH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
K ₄ A ₄ 24C8-1	Ca ²⁺	4.60	Spec			25	THF	796
	H ⁺	5.75(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	797
Py ₂ A ₄ 24C8-1	H ⁺	7.94(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	797
	H ⁺	7.36(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	797
	H ⁺	6.79(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	797
	Co ²⁺	9.05	Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Co ²⁺	3.00						
	(Co ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Co ²⁺	7.42						
	(CoHL)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Ni ²⁺	11.25	Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Ni ²⁺	3.73						
	(Ni ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Ni ²⁺	9.90						
	(NiHL)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Ni ²⁺	6.61						
	(NiH ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Cu ²⁺	15.19	Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
	Cu ²⁺	8.82						
	(Cu ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798
Cu ²⁺	13.88							
(CuHL)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798	
Cu ²⁺	11.18							
(CuH ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798	
Zn ²⁺	8.89	Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798	
Zn ²⁺	3.80							
(Zn ₂ L)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798	
Zn ²⁺	7.59							
(ZnHL)		Pot			25	H ₂ O, 0.1 M KNO ₃	797, 798	
A ₆ 24C8-1	H ⁺	9.15(1)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	9.00(2)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	8.20(3)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	7.20(4)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	3.70(5)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	3.40(6)	Pot			25	H ₂ O, 0.1 M TsONa	783
	H ⁺	9.65(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	H ⁺	8.92(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	H ⁺	8.30(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	799

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	7.64(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	H ⁺	3.81(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	H ⁺	3.26(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Co ²⁺	9.73	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Co ²⁺	2.7						
		(Co ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Co ²⁺	7.58	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CoHL)					(CoL ²⁺ + H ⁺)	799
	Co ²⁺	5.97	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CoH ₂ L)					(CoHL ³⁺ + H ⁺)	799
	Co ²⁺	none	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CoH ₃ L)					(CoH ₃ L ⁴⁺ + H ⁺)	799
	Co ²⁺	10.35	Pot			25	H ₂ O, 0.1 M KCl	800
	Co ²⁺	3.15						
		(Co ₂ L)	Pot			25	H ₂ O, 0.1 M KCl	800
	Co ²⁺	8.74						
		(CoHL)	Pot			25	H ₂ O, 0.1 M KCl	800
	Co ²⁺	5.28						
		(CoH ₂ L)	Pot			25	H ₂ O, 0.1 M KCl	800
	Co ²⁺	4.74						
		(CoH ₃ L)	Pot			25	H ₂ O, 0.1 M KCl	800
	Ni ²⁺	13.65	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Ni ²⁺	none						
		(Ni ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Ni ²⁺	7.17	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(NiHL)					(NiL ²⁺ + H ⁺)	799
	Ni ²⁺	5.03	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(NiH ₂ L)					(NiHL ³⁺ + H ⁺)	799
	Ni ²⁺	none	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(NiH ₃ L)					(NiH ₃ L ⁴⁺ + H ⁺)	799
	Cu ²⁺	16.46	Pot			25	H ₂ O, 0.1 MKNO ₃	799
	Cu ²⁺	10.84						
		(Cu ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Cu ²⁺	8.01	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CuHL)					(CuL ²⁺ + H ⁺)	799
	Cu ²⁺	7.46	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CuH ₂ L)					(CuHL ³⁺ + H ⁺)	799
	Cu ²⁺	3.45	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(CuH ₃ L)					(CuH ₃ L ⁴⁺ + H ⁺)	799
	Zn ²⁺	10.66	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Zn ²⁺	4.20						
		(Zn ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	799
	Zn ²⁺	7.58	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(ZnHL)					(ZnL ²⁺ + H ⁺)	799
	Zn ²⁺	5.63	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(ZnH ₂ L)					(ZnHL ³⁺ + H ⁺)	799
	Zn ²⁺	none	Pot			25	H ₂ O, 0.1 M KNO ₃	
		(ZnH ₃ L)					(ZnH ₃ L ⁴⁺ + H ⁺)	799
A ₆ 24C8.1	H ⁺	9.65(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	9.33(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	8.76(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	7.87(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	4.55(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	3.42(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	2.71(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	1.9(8)	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	H ⁺	10.01(1)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	9.50(2)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	9.10(3)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	8.29(4)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	5.01(5)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	3.71(6)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	2.98(7)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	1.97(8)	Pot			25	H ₂ O, 0.5 M NaClO ₄	801
	H ⁺	10.12(1)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	9.38(2)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	8.46(3)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	7.62(4)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	4.61(5)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	2.79(6)	Pot			25	Me ₂ SO-H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Co ²⁺	13.20	Pot			25	H ₂ O, 0.15 M NaClO ₄	765
	Co ²⁺	21.53	Pot			25	H ₂ O, 0.15 M NaClO ₄	
		(CoHL)					(Co ²⁺ + L + H ⁺)	765
	Co ²⁺	28.93	Pot			25	H ₂ O, 0.15 M NaClO ₄	
		(CoH ₂ L)					(Co ²⁺ + L + 2H ⁺)	765
	Ni ²⁺	13.94	Pot			25	H ₂ O, 0.15 M NaClO ₄	766
	Ni ²⁺	9.36						
		(Ni ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	766
	Ni ²⁺	23.03	Pot			25	H ₂ O, 0.15 M NaClO ₄	
		(NiHL)					(Ni ²⁺ + L + H ⁺)	766
	Ni ²⁺	30.26	Pot			25	H ₂ O, 0.15 M NaClO ₄	
		(NiH ₂ L)					(Ni ²⁺ + L + 2H ⁺)	766

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	Cu ²⁺	36.63 (Cu ₂ L)	Pot	-163(Cal)	154	25	H ₂ O, 0.5 M NaClO ₄ (2Cu ²⁺ + L)	801
	Cu ²⁺	42.02 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄ (2Cu ²⁺ + L + 2H ⁺)	801
	Cu ²⁺	22.51 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄ (2Cu ²⁺ + H ₂ L ²⁺)	801
	Cu ²⁺	26.12 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.5 M NaClO ₄ (2Cu ²⁺ + L + H ₂ O)	801
	Cu ²⁺	39.84 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.5 M NaClO ₄ (2Cu ²⁺ + L + OH ⁻)	801
	Zn ²⁺	13.49	Pot			25	H ₂ O, 0.15 M NaClO ₄	724
	Zn ²⁺	22.07 (ZnHL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + H ⁺)	724
	Zn ²⁺	27.60 (ZnH ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + 2H ⁺)	724
	Zn ²⁺	2.8 (ZnLOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + H ₂ O)	724
	Zn ²⁺	12.60 (Zn ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + H ₂ O)	724
	Zn ²⁺	3.0 (ZnL(OH) ₂)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ₂ O)	724
	Zn ²⁺	14.04	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Zn ²⁺	22.49 (ZnHL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Zn ²⁺ + L + H ⁺)	763
	Zn ²⁺	9.69 (Zn ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Zn ²⁺	28.62 (Zn ₂ HL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + H ⁺)	763
	Zn ²⁺	33.59 (Zn ₂ H ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 2H ⁺)	763
	Zn ²⁺	13.49 (Zn ₂ LOH)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + H ₂ O)	763
	Zn ²⁺	8.5 (Zn ₂ LOH)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Zn ₂ L ⁴⁺ + OH ⁻)	763
	Cd ²⁺	14.52	Pot			25	H ₂ O, 0.15 M NaClO ₄	725
	Cd ²⁺	21.67 (CdHL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Cd ²⁺ + L + H ⁺)	725
	Cd ²⁺	27.53 (CdH ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Cd ²⁺ + L + 2H ⁺)	725
	Cd ²⁺	18.21 (Cd ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L)	725
	Cd ²⁺	17.86	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Cd ²⁺	23.85 (CdHL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Cd ²⁺ + L + H ⁺)	763
	Cd ²⁺	29.73 (CdH ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Cd ²⁺ + L + 2H ⁺)	763
	Cd ²⁺	34.85 (CdH ₃ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Cd ²⁺ + L + 3H ⁺)	763
	Cd ²⁺	4.35 (Cd ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Cd ²⁺	27.38 (Cd ₂ HL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Cd ²⁺ + L + H ⁺)	763
				Chart LII				
25C8-1 (1,3-B) ₄ A ₄ 26C4-tetraene-1	K ⁺	2.43	ISE			25	MeOH	466
	Li ⁺	2.05	NMR			25	MeCN·CH ₂ Cl ₂ (1:9)	802
	Cs ⁺	1.79	NMR			25	MeOH·CH ₂ Cl ₂ (1:9)	802
A ₆ 26C6-1	H ⁺	10.73(1)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	10.31(2)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	9.93(3)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	8.47(4)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	3.82(5)	Pot			25	H ₂ O, 0.5 M KCl	770
	H ⁺	3.57(6)	Pot			25	H ₂ O, 0.5 M KCl	770
	Cu ²⁺	16.20	Pot			25	H ₂ O, 0.5 M KCl	770
	Cu ²⁺	9.90 (CuHL)	Pot			25	H ₂ O, 0.5 M KCl (CuL ²⁺ + H ⁺)	770
	Cu ²⁺	9.23 (CuH ₂ L)	Pot			25	H ₂ O, 0.5 M KCl (CuHL ³⁺ + H ⁺)	770
	Cu ²⁺	3.86 (CuH ₃ L)	Pot			25	H ₂ O, 0.5 M KCl (CuH ₂ L ⁴⁺ + H ⁺)	770
	Cu ²⁺	13.06 (Cu ₂ L)	Pot			25	H ₂ O, 0.5 M KCl	770
K ₄ (1,4-B) ₂ A ₆ 26C6-1	H ⁺	11.8(1)	Spec			25	H ₂ O, 0.1 M KNO ₃	803
	H ⁺	10.7(2)	Spec			25	H ₂ O, 0.1 M KNO ₃	803
	H ⁺	10.4(3)	Spec			25	H ₂ O, 0.1 M KNO ₃	803

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	9.9(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	803
	H ⁺	7.8(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	803
	H ⁺	6.9(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	803
	Fe ³⁺	37.6	Pot			25	H ₂ O, 0.1 M KNO ₃	
	Fe ³⁺	36.0 (FeHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + L ⁶⁻)	803
	Fe ³⁺	32.8 (FeH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + H ₂ L ⁴⁺)	803
	Fe ³⁺	27.1 (FeH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + H ₃ L ³⁺)	803
26C8-1	K ⁺	<0.7	ISE			25	MeOH	466
B26C8-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
B ₂ 26C8-1	H ⁺	6.10	Pot			25	52.1 wt% MeOH·H ₂ O	599
Fur26C8-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
Thio28C8-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
26C8-ene-1	Na ⁺	1.34	ISE			25	MeOH	479
	K ⁺	2.63(1)	ISE			25	MeOH	479
	K ⁺	2.1(2)	ISE			25	MeOH	479
K ₂ A ₄ 26C8-1	H ⁺	9.86(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	9.21(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	7.70(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	4.14(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	Fe ³⁺	15.78 (FeHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + HL ⁻)	804
	Fe ³⁺	10.58 (FeH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + H ₂ L)	804
	Ni ²⁺	10.82	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + L ²⁻)	804
	Ni ²⁺	9.06 (NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + HL ⁻)	804
	Ni ²⁺	7.80 (NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + H ₂ L)	804
	Ni ²⁺	4.21 (NiH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + H ₃ L ⁺)	804
K ₂ A ₄ 26C8-2	H ⁺	11.91(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	
	H ⁺	9.79(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	8.11(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	4.25(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	2.70(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	H ⁺	2.18(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	804
	Fe ³⁺	24.45	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + L ⁴⁻)	804
	Fe ³⁺	17.28 (FeHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + HL ³⁻)	804
	Fe ³⁺	11.16 (FeH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + H ₂ L ²⁻)	804
	Fe ³⁺	5.75 (FeH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Fe ³⁺ + H ₃ L ⁻)	804
	Ni ²⁺	13.64	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + L ⁴⁻)	804
	Ni ²⁺	11.27 (NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + HL ³⁻)	804
	Ni ²⁺	7.81 (NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + H ₂ L ²⁻)	804
	Ni ²⁺	3.57 (NiH ₃ L)	Pot			25	H ₂ O, 0.1 M KNO ₃ (Ni ²⁺ + H ₃ L ⁻)	804
				Chart LIV				
26C9-1	Rb ⁺	4.2	Spec			25	Diox·H ₂ O (6:4/v:v), (anion = Cl ⁻)	86
	Cs ⁺	2.1	Spec			25	Diox·H ₂ O (6:4/v:v), (anion = Cl ⁻)	86
(1,3-B)27C8-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄ ^c)	206
	guanidinium	<1	Pot			25	MeOH (anion = SCN ⁻)	637
(1,3-B)27C8-2	H ⁺	3.80	Pot			25	H ₂ O	123, 271
K ₂ 27C9-1	Na ⁺	1.43 (Na ₂ L)	Polg			25	EtOH, 0.02 M Bu ₄ NI	297
	K ⁺	1.46 (K ₂ L)	Polg			25	EtOH, 0.02 M Bu ₄ NI	297
27C9-1	H ⁺	5.24	Pot			25	52.1 wt% MeOH·H ₂ O	599
27C9-2	H ⁺	5.89	Pot			25	52.1 wt% MeOH·H ₂ O	599
27C9-3	NH ₄ ⁺	3.78	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	CH ₃ NH ₃ ⁺	3.08	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	C ₂ H ₅ NH ₃ ⁺	2.20	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	(CH ₃) ₂ NH ₂ ⁺	2.04	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	(CH ₃) ₃ NH ⁺	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	(CH ₃) ₄ N ⁺	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	guanidinium	3.95	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	methyl-							

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	guanidinium	2.65	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	ethyl- guanidinium	2.18	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	N,N'-diethyl- guanidinium	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	N,N',N',N'- tetramethyl- guanidinium	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	⁺ H ₃ N·(CH ₂) ₂ ·NH ₃ ⁺	5.30	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	⁺ H ₃ N·(CH ₂) ₃ ·NH ₃ ⁺	4.78	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	⁺ H ₃ N·(CH ₂) ₄ ·NH ₃ ⁺	3.86	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₄ ·NH ₃ ⁺	3.67	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₂ ·G ⁺	4.15	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₃ ·G ⁺	3.63	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₄ ·G ⁺	3.32	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₅ ·G ⁺	3.18	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	G ⁺ ·(CH ₂) ₆ ·G ⁺	3.00	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	L·Arg ⁺ #	2.40	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	creatine ⁺	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	D,L·Lys ⁺ #	2.22	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	L·ornithine ⁺	2.85	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	streptidine ⁺	3.04	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	imidazolium	2.54	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	N·methyl- imidazolium	<1.0	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	2-methyl- imidazolium	~1.48	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
	N-acetyl- histamine·H ⁺	2.08	NH ₄ ⁺ ISE			25	H ₂ O, pH 7.3 (0.1 M Tris)	805
Cy ₂ 27C9-1	H ⁺	3.95	Cal	.56.0	.113	25	MeCN	629
B27C9-1	Li ⁺	5.47	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	5.09	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Na ⁺	1.88	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	6.26	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	K ⁺	4.00	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	5.92	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Rb ⁺	3.78	Polg			25	MeOH, 0.1 M Me ₄ NI	367
	Rb ⁺	3.88	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	5.73	Solv Extr·UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a
	Cs ⁺	4.57	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ²⁺	3.93	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.77	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.77	Pot			25	MeOH (anion = SCN ⁻)	637
B ₂ 27C9-1	Na ⁺	1.90	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	4.36	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	4.31	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	4.35	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ⁺	2.83	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	<1	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	<1	Pot			25	MeOH (anion = SCN ⁻)	637
B ₂ 27C9-2	Na ⁺	2.41	Cal	.19.0	.17.7	25	MeOH	331
	K ⁺	4.10	Cs-133 NMR			22	MeCN (anion = SCN ⁻)	526
	Cs ⁺	2.14	NMR			25	DMAC	318
	Cs ⁺	2.96	NMR			-10	86.04 mol% DMF·MeCN	792
	Cs ⁺	2.79	NMR			0	86.04 mol% DMF·MeCN	792
	Cs ⁺	2.64	NMR			10	86.04 mol% DMF·MeCN	792
	Cs ⁺	2.50	NMR			20	86.04 mol% DMF·MeCN	792
	Cs ⁺	2.28	NMR			30	86.04 mol% DMF·MeCN	792
	Cs ⁺	2.17	NMR			40	86.04 mol% DMF·MeCN	792
	Cs ⁺	3.50	NMR			-20	61.5 mol% DMF·MeCN	792
	Cs ⁺	3.20	NMR			-10	61.5 mol% DMF·MeCN	792
	Cs ⁺	3.03	NMR			0	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.89	NMR			10	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.69	NMR			20	61.5 mol% DMF·MeCN	792
	Cs ⁺	2.55	NMR			30	61.5 mol% DMF·MeCN	792
	Cs ⁺	3.51	NMR			0	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.45	NMR			10	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.34	NMR			20	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.20	NMR			30	22.69 mol% DMF·MeCN	792
	Cs ⁺	3.01	NMR			40	22.69 mol% DMF·MeCN	792
	Cs ⁺	2.84	NMR			50	22.69 mol% DMF·MeCN	792
	Cs ⁺	2.89	NMR			-10	DMF	792
	Cs ⁺	2.78	NMR			0	DMF	792
	Cs ⁺	2.58	NMR			10	DMF	792
	Cs ⁺	2.33	NMR			20	DMF	792
	Cs ⁺	2.20	NMR			30	DMF	792
	Cs ⁺	2.05	NMR			40	DMF	792

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Cs ⁺	2.20	NMR			25	DMF	318	
	Cs ⁺	none	NMR			25	Form (insoluble ligand)	318	
	Cs ⁺	4.24	NMR			9	MeCN	792	
	Cs ⁺	4.17	NMR			17	MeCN	792	
	Cs ⁺	3.89	NMR			30	MeCN	792	
	Cs ⁺	3.63	NMR			45	MeCN	792	
	Cs ⁺	3.30	NMR			63	MeCN	792	
	Cs ⁺	3.09	NMR			77	MeCN	792	
	Cs ⁺	3.67	Cal	-41.97	-70.5	25	MeOH	331	
	Cs ⁺	2.6	NMR			25	NMF	318	
	Ag ⁺	2.47	Cal	-14.0	0.27	25	MeOH	331	
Py27C9-1	cation-18/ cation-19'	2.61	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	806, 807	
		4.82	Spec			25	MeCN (anion = PF ₆ ⁻)	808	
	H ⁺	3.70	Pot			25	H ₂ O	271	
	Li ⁺	2.02	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Na ⁺	1.60	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	3.23	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	3.08	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	3.20	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Ba ⁺	5.45	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.18	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
Py27C9-2	H ⁺	3.70	Pot			25	H ₂ O, 0.1 M HCl	385, 386	
	H ⁺	~3.05	Pot			25	85.4 wt% EtOH·H ₂ O	386	
	H ⁺	~3.3	Pot			25	51.2 wt% MeOH·H ₂ O	386	
	H ⁺	~5.1	Pot			25	MeOH	386	
Py27C9-3	H ⁺	3.74	Pot			25	H ₂ O	271	
	A ₄ 27C9-1	11.54(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	H ⁺	9.03(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	H ⁺	5.21(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	H ⁺	2.83(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Dy ³⁺	16.9	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Dy ³⁺	11.1							
	(DyHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Dy ³⁺	5.0							
	(DyH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Co ²⁺	16.6	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Co ²⁺	12.4							
	(CoHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Co ²⁺	7.2							
	(CoH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Ni ²⁺	17.9	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Ni ²⁺	13.9							
	(NiHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
	Ni ²⁺	8.3							
	(NiH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
Chart LV									
A ₆ 27C9-1	H ⁺	9.65(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	9.15(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	8.45(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	6.80(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	5.80(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	5.70(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	H ⁺	9.35(1)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	H ⁺	9.25(2)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	H ⁺	8.35(3)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	H ⁺	6.80(4)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	H ⁺	5.65(5)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	H ⁺	5.55(6)	Pot			25	H ₂ O, 0.1 M TsONa	783	
	Cu ²⁺	25(Cu ₃ L)		Spec			25?	H ₂ O, pH~5.5-6.5 (3Cu ²⁺ + L)	809
	Cu ²⁺	32 (Cu ₃ LOH)		Spec			25?	H ₂ O, pH~6.5-9 (3Cu ²⁺ + L + OH ⁻)	809
Cu ²⁺	38 (Cu ₃ (OH) ₂ L)		Spec			25?	H ₂ O, pH~9-11 (3Cu ²⁺ + L + 2OH ⁻)	809	
A ₉ 27C9-1	H ⁺	9.59(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	9.40(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	8.77(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	8.27(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	6.37(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	4.22(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	3.24(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	2.31(8)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	H ⁺	1.8(9)	Pot			25	H ₂ O, 0.15 M NaClO ₄	810	
	Co ²⁺	11.84	Pot			25	H ₂ O, 0.15 M NaClO ₄	765	
	Co ²⁺	7.01							
		(Co ₂ L)		Pot			25	H ₂ O, 0.15 M NaClO ₄	765
	Co ²⁺	21.46	Pot			25	H ₂ O, 0.15 M NaClO ₄	765	
		(CoHL)						(Co ²⁺ + L + H ⁺)	765
	Co ²⁺	28.91	Pot			25	H ₂ O, 0.15 M NaClO ₄	765	
		(CoH ₂ L)						(Co ²⁺ + L + 2H ⁺)	765
	Co ²⁺	31.32	Pot			25	H ₂ O, 0.15 M NaClO ₄	765	
	(Co ₂ H ₂ L)						(2Co ²⁺ + L + 2H ⁺)	765	
Co ²⁺	9.88	Pot			25	H ₂ O, 0.15 M NaClO ₄	765		
	(Co ₂ LOH)						(2Co ²⁺ + L + H ₂ O)	765	
Co ²⁺	4.76	Pot			25	H ₂ O, 0.15 M NaClO ₄	765		
	(Co ₂ LOH)						(Co ₂ L ⁴⁺ + L + OH ⁻)	765	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
	Ni ²⁺	26.24 (Ni ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L))	766	
	Ni ²⁺	31.46 (Ni ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + H ⁺)	766	
	Ni ²⁺	36.73 (Ni ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 2H ⁺)	766	
	Cu ²⁺	36.03 (Cu ₂ L)	Pot	-179(Cal)	87.2	25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L)	810	
	Cu ²⁺	40.66 (Cu ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + H ⁺)	810	
	Cu ²⁺	43.83 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 2H ⁺)	810	
	Cu ²⁺	47.10 (Cu ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 3H ⁺)	810	
	Cu ²⁺	26.24 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + H ₂ O)	810	
	Zn ²⁺	20.55 (Zn ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L)	811	
	Zn ²⁺	26.98 (Zn ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + H ⁺)	811	
	Zn ²⁺	32.79 (Zn ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ⁺)	811	
	Zn ²⁺	13.56 (Zn ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + H ₂ O)	811	
	Zn ²⁺	4.71 (Zn(OH) ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ₂ O)	811	
	Cd ²⁺	20.75 (Cd ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L)	725	
	Cd ²⁺	26.38 (Cd ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L + H ⁺)	725	
	Cd ²⁺	32.21 (Cd ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L + 2H ⁺)	725	
K ₄ (1,4-B) ₄ A ₄ 28C ₄ -2	Rhodamine 6G ⁺	3.68	Spec			39.4	Me ₂ SO·EtOH-H ₂ O (10:1:89/v:v:v), pH 10.29, 0.15 M KCl	812	
	Quinaldine Red ⁺	3.66	Spec			39.4	Me ₂ SO·EtOH-H ₂ O (10:1:89/v:v:v), pH 10.29, 0.15 M KCl	812	
CHART LVI									
B ₄ A ₄ 28C ₈ -1	H ⁺	9.66(1)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
	H ⁺	8.20(2)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
	H ⁺	6.03(3)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
	H ⁺	5.93(4)	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
	Co ²⁺	10.13	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
	Ni ²⁺	12.61	Pot			25	95% MeOH, 0.1 M Me ₄ NCl	813	
Py ₂ A ₆ 28C ₈ -1	H ⁺	9.97(1)	Pot			25	H ₂ O, 0.1 M KCl	814	
	H ⁺	9.32(2)	Pot			25	H ₂ O, 0.1 M KCl	814	
	H ⁺	7.93(3)	Pot			25	H ₂ O, 0.1 M KCl	814	
	H ⁺	7.35(4)	Pot			25	H ₂ O, 0.1 M KCl	814	
	H ⁺	6.97(5)	Pot			25	H ₂ O, 0.1 M KCl	814	
	H ⁺	6.38(6)	Pot			25	H ₂ O, 0.1 M KCl	814	
(Phos) ₂ B ₄ 28C ₁₂ -1	Li ⁺	1.9	Cond			22	EtOH·CHCl ₃ (1:1), (anion = acetate)	793	
	Li ⁺	3.0	Cond			22	MeCN·CHCl ₃ (1:1), (anion = Cl ⁻)	793	
	Li ⁺	2.7	Cond			22	MeCN·CHCl ₃ (1:1), (anion = I ⁻)	793	
	Li ⁺	2.84	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Na ⁺	1.7	Cond			22	EtOH·CHCl ₃ (1:1), (anion = acetate)	793	
	Na ⁺	4.12	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	K ⁺	1.0	Cond			22	EtOH·CHCl ₃ (1:1), (anion = acetate)	793	
	K ⁺	3.53	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Ca ²⁺	0.3	Cond			22	EtOH·CHCl ₃ (1:1), (anion = acetate)	793	
	Mg ²⁺	4.22	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Ca ²⁺	4.11	Sol			25	MeCN·CH ₂ Cl ₂ (2:98/v:v)	263	
	Eu ³⁺ , 3Fod ⁻	1.67	Spec			28	CDCl ₃ (Fod = heptafluoro- dimethyloctanedionate)	793a	
B ₂ 29C ₉ -1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
B ₂ 29C ₉ -1	H ⁺	6.07	Pot			25	52.1 wt% MeOH-H ₂ O	599	
Fur ₂ 29C ₉ -1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
Thio ₂ 29C ₉ -1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
29C ₉ -ene-1	Na ⁺	1.51	ISE			25	MeOH	479	
	K ⁺	2.60(1)	ISE			25	MeOH	479	
	K ⁺	2.3(2)	ISE			25	MeOH	479	
(1,4-B) ₂ A ₂ 29C ₉ -1	Na ⁺	3.14	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	K ⁺	2.90	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
Py ₂ A ₄ 30C8-1	Cd ²⁺	<3	Spec			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819	
	H ⁺	8.76(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	H ⁺	8.11(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	H ⁺	7.68(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	H ⁺	6.97(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Co ²⁺	8.86	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Co ²⁺	4.1 (Co ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Co ²⁺	6.99 (CoHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Co ²⁺	5.31 (CoH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Ni ²⁺	11.30	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Ni ²⁺	5.2 (Ni ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Ni ²⁺	9.73 (NiHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Ni ²⁺	7.91 (NiH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Cu ²⁺	14.81	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Cu ²⁺	10.95 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Cu ²⁺	13.09 (CuHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Cu ²⁺	11.7 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Zn ²⁺	8.70	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Zn ²⁺	3.9 (Zn ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
	Zn ²⁺	6.98 (ZnHL)	Pot			25	H ₂ O, 0.1 M KNO ₃	798	
Zn ²⁺	5.29 (ZnH ₂ L)	Pot			25	H ₂ O, 0.1 M KNO ₃	798		
CHART LVIII									
(1,3-B)30C9-1	K ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Rb ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
	Cs ⁺	>6.00	Sol-NMR			27	CDCl ₃ (anion = Pt(II)Cl ₃ C ₂ H ₄)	206	
(1,3-B)30C9-2	H ⁺	3.4	Pot			22	H ₂ O	270, 272	
	H ⁺	3.94	Pot			25	H ₂ O	123, 271	
(1,3-B)30C9-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.38	Solv Extr-NMR (SCN ⁻ Anal)			22	CHCl ₃ (anion = SCN ⁻)	270	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.89	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	272	
(1,3-B)B ₂ 30C9-1	guanidinium	<1	Pot			25	MeOH (anion = SCN ⁻)	637	
30C10-1	H ⁺	5.86	Pot			25	52.1 wt % MeOH-H ₂ O	599	
Cy ₂ 30C10-1	H ⁺	4.19	Cal	·44.8	·70.5	25	MeCN	629	
B30C10-1	Li ⁺	5.46	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Li ⁺	none	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352	
	Na ⁺	5.02	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Na ⁺	1.93	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Na ⁺	none	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352	
	K ⁺	6.58	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	K ⁺	4.28	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	1.25	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352	
	Rb ⁺	6.64	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Rb ⁺	4.49	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	1.57	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352	
	Cs ⁺	5.99	Solv Extr-UV (Pic Anal)			22-23	CDCl ₃ (anion = picrate)	349a	
	Cs ⁺	4.35	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	1.38	Spec			25	Me ₂ SO·H ₂ O (99:1/v:v)	352	
	Ba ⁺	5.01	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.93	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.83	Pot			25	MeOH (anion = SCN ⁻)	637	
B30C10-2	H ⁺	5.32	Pot			25	52.1 wt % MeOH-H ₂ O	599	
B ₂ 30C10-1	Na ⁺	1.98	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	4.47	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	4.69	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	4.38	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Ba ⁺	3.94	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	La ³⁺	2.92	Cal	4.52	71.07	25	MeCN·H ₂ O (90:10/v:v) (anion = ClO ₄ ⁻)	820	
	La ³⁺	2.70	Cal	2.34	59.53	25	MeNC·H ₂ O (95:5/v:v) (anion = ClO ₄ ⁻)	820	
	La ³⁺	2.74	Cal	-3.72	39.98	25	MeCN·H ₂ O (98:2/v:v) (anion = ClO ₄ ⁻)	820	
	La ³⁺	2.78	Cal	-4.56	37.93	25	MeCN·H ₂ O (99:1/v:v) (anion = ClO ₄ ⁻)	820	
	La ³⁺	4.48	Cal	·7.78	59.70	25	MeCN·H ₂ O (99.6:0.4/v:v) (anion = ClO ₄ ⁻)	820	
	La ³⁺	4.84	Cal	·12.92	49.34	25	MeCN·H ₂ O (99.8:0.2/v:v) (anion = ClO ₄ ⁻)	820	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
B ₂ 30C10-2	La ³⁺		Cal	-18.38		25	MeCN (anion = ClO ₄ ⁻)	820
	guanidinium	1.50	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.51	Pot			25	MeOH (anion = SCN ⁻)	637
	Na ⁺	1.98	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	4.62	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	4.89	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	4.79	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
B ₂ 30C10-3	Ba ⁺	2.99	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.62	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.62	Pot			25	MeOH (anion = SCN ⁻)	637
	H ⁺	3.64	Cal	-37.2	-55.4	25	MeCN	629
	Na ⁺	3.21	Sol			25	MeCN	528
	Na ⁺	2.80	ISE			25	MeOH	634
	Na ⁺	>5	NMR			25	NMe (anion = BPh ₄ ⁻)	821
	Na ⁺	2.1						
		(Na ₂ L)	NMR			25	NMe (anion = BPh ₄ ⁻)	821
	Na ⁺	2.5	NMR			25	NMe (anion = BPh ₄ ⁻)	
		(Na ₃ L ₂)					(Na ₂ L ₂ ²⁺ + NaL ⁺)	821
	Na ⁺	3.83	Sol			25	PC	528
	K ⁺	5.97	Sol			25	n-BuOH (anion = picrate)	822
	K ⁺	2.22	Sol			25	DMF	528
	K ⁺	2.00	Pot			25	DMF	528
	K ⁺	2.42	Spec			25	20 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	2.71	Spec			25	40 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	3.23	Spec			25	60 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	3.88	Spec			25	80 wt% MeCN·H ₂ O, 0.015 M Et ₃ NCl	355
	K ⁺	4.90	Spec			25	MeCN, 0.015 M Et ₃ NCl	355
	K ⁺	4.82	Pot			25	MeCN	528
	K ⁺	4.83	Sol			25	MeCN	528
	K ⁺	4.24	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄ , (anion = BPh ₄ ⁻)	822
	K ⁺	4.23	ISE			25	MeOH	634
	K ⁺	4.94	Pot			25	MeOH	366
	K ⁺	4.72	Sol			25	MeOH (anion = I ⁻)	822
	K ⁺	2.16	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄ , (anion = BPh ₄ ⁻)	822
K ⁺	>5	NMR			21	NMe (anion = SCN ⁻)	823	
K ⁺	1.72(K ₂ L)	NMR			21	NMe (anion = SCN ⁻)	823	
K ⁺	4.69	Pot			25	PC	528	
K ⁺	4.72	Sol			25	PC	528	
K ⁺	4.29	Pot			25	PC, 0.1 M Et ₄ NClO ₄ , (anion = BPh ₄ ⁻)	822	
K ⁺	5.81	Sol			25	i-PrOH (anion = picrate)	822	
Rb ⁺	2.33	Pot			25	DMF	528	
Rb ⁺	2.67	Sol			25	DMF	528	
Rb ⁺	4.50	Sol			25	MeCN	528	
Rb ⁺	1.55	Pot			25	Me ₂ SO	528	
Rb ⁺	4.82	Sol			25	PC	528	
Cs ⁺	2.65	Pot			25	DMF	528	
Cs ⁺	2.02	Sol			25	DMF	528	
Cs ⁺	4.0	Pot			25	MeOH	366	
Cs ⁺	1.48	Pot			25	Me ₂ SO	528	
Cs ⁺	3.85	Sol			25	PC	528	
Ca ²⁺	3.28	Spec			25	DMF	824	
Ca ²⁺	4.25	Spec			25	MeOH	824	
Ca ²⁺	2.92	Spec			25	Me ₂ SO	824	
Sr ²⁺	3.86	Spec			25	DMF	824	
Sr ²⁺	4.74	Spec			25	MeOH	824	
Sr ²⁺	3.61	Spec			25	Me ₂ SO	824	
Ba ²⁺	3.51	Spec			25	DMF	824	
Ba ²⁺	4.37	Spec			25	MeOH	824	
Ba ²⁺	3.40	Spec			25	Me ₂ SO	824	
La ³⁺	4.3	Calc'd			25?	PC (anhydrous)	111	
Gd ³⁺	3.55	Calc'd			25?	PC (anhydrous)	111	
Lu ³⁺	4.80	Calc'd			25?	PC (anhydrous)	111	
Ag ⁺	2.80	Sol			25	n-BuOH	528	
Ag ⁺	1.60	Pot			25	DMF	528	
Ag ⁺	3.42	Spec			25	DMF	824	
Ag ⁺	3.34	Pot			25	Me ₂ CO	528	
Ag ⁺	2.26	Sol			25	MeOH	528	
Ag ⁺	4.31	Spec			25	MeOH	824	
Ag ⁺	5.31	Pot			25	PC	528	
Ag ⁺	2.34	Sol			25	i-PrOH	528	
UO ₂ ²⁺	2.95	Spec			25	PC, 0.1 M Et ₄ NClO ₄	333, 334	
cation-18'	3.61	Spec			25.5	MeCN (anion = PF ₆ ⁻)	806, 807	
cation-18'	4.24	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	806, 807	
cation-19'	5.28	Spec			25	MeCN (anion = PF ₆ ⁻)	808	
B ₂ 30C10-4	Na ⁺	2.52	ISE			25	MeOH	634
	K ⁺	4.67	ISE			25	MeOH	634
	cation-18'	4.68	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	825
B ₂ 30C10-5	Na ⁺	3.53	Cond			25	MeOH	373
	K ⁺	4.44	Cond			25	MeOH	373
	Rb ⁺	4.51	Cond			25	MeOH	373
	Cs ⁺	4.58	Cond			25	MeOH	373

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
B ₂ 30C10-6	K ⁺	4.83	Pot			25	MeOH	366
	Rb ⁺	4.8	Pot			25	MeOH	366
	Cs ⁺	4.15	Pot			25	MeOH	366
B ₂ 30C10-7	cation·18 ^f	3.32	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	825
B ₂ 30C10-8	cation·18 ^f	4.70	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	825
(2,3-Nap) ₂ 30C10-1	cation·18 ^f	3.14	Spec			25.5	MeCN (anion = PF ₆ ⁻)	806, 807
	H ⁺	3.53	Pot			25	H ₂ O	271
	Li ⁺	2.12	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Na ⁺	1.71	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	3.15	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	3.44	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	3.51	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ⁺	>5.5	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.32	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Py30C10-2	H ⁺	3.70	Pot			25	H ₂ O
Py30C10-3	H ⁺	3.53	Pot			25	H ₂ O, 0.1 M HCl	385, 386
	H ⁺	~2.9	Pot			25	85.4 wt% EtOH·H ₂ O	386
	H ⁺	~3.0	Pot			25	51.2 wt% MeOH·H ₂ O	386
	H ⁺	~4.75	Pot			25	MeOH	386
A ₄ 30C10-1	H ⁺	11.60(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	9.02(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	5.16(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	H ⁺	2.70(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	17.6	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Dy ³⁺	10.9						
	(DyHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	18.6	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	14.0						
	(NiHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Ni ²⁺	8.3						
	(NiH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
	Co ²⁺	16.5	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760
Co ²⁺	12.1							
(CoHL)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
Co ²⁺	6.8							
(CoH ₂ L)		Pot			25	H ₂ O, 0.1 M Me ₄ NCl	760	
A ₁₀ 30C10-1	H ⁺	9.85(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	9.44(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	8.95(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	8.56(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	7.79(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	5.24(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	3.84(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	3.02(8)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	1.97(9)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	H ⁺	1.8(10)	Pot			25	H ₂ O, 0.15 M NaClO ₄	826
	Co ²⁺	21.85	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Co ₂ L)						(2Co ²⁺ + L)	765
	Co ²⁺	34.67	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Co ₂ H ₂ L)						(2Co ²⁺ + L + 2H ⁺)	765
	Co ²⁺	39.79	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Co ₂ H ₃ L)						(2Co ²⁺ + L + 3H ⁺)	765
	Co ²⁺	11.94	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Co ₂ LOH)						(2Co ²⁺ + L + H ₂ O)	765
	Co ²⁺	3.82	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Co ₂ LOH)						(Co ₂ L ⁴⁺ + OH ⁻)	765
	Ni ²⁺	30.02	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Ni ₂ L)						(2Ni ²⁺ + L)	766
	Ni ²⁺	40.17	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Ni ₂ H ₂ L)						(2Ni ²⁺ + L + 2H ⁺)	766
	Cu ²⁺	37.77	Pot	-190(Cal)	84.2	25	H ₂ O, 0.15 M NaClO ₄	
	(Cu ₂ L)						(2Cu ²⁺ + L)	826
	Cu ²⁺	43.36	Pot			25	H ₂ O, 0.15 M NaClO ₄	
	(Cu ₂ HL)						(2Cu ²⁺ + L + H ⁺)	826
	Cu ²⁺	47.21	Pot			25	H ₂ O, 0.15 M NaClO ₄	
(Cu ₂ H ₂ L)						(2Cu ²⁺ + L + 2H ⁺)	826	
Cu ²⁺	50.52	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Cu ₂ H ₃ L)						(2Cu ²⁺ + L + 3H ⁺)	826	
Cu ²⁺	26.43	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(CuLOH)						(2Cu ²⁺ + L + H ₂ O)	826	
Zn ²⁺	22.51	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Zn ₂ L)						(2Zn ²⁺ + L)	811	
Zn ²⁺	35.22	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Zn ₂ H ₂ L)						(2Zn ²⁺ + L + 2H ⁺)	811	
Zn ²⁺	40.41	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Zn ₂ H ₃ L)						(2Zn ²⁺ + L + 3H ⁺)	811	
Zn ²⁺	14.16	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Zn ₂ LOH)						(2Zn ²⁺ + L + H ₂ O)	811	
Zn ²⁺	3.19	Pot			25	H ₂ O, 0.15 M NaClO ₄		
Zn ₂ L(OH) ₂						(2Zn ²⁺ + L + 2H ₂ O)	811	
Cd ²⁺	23.21	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Cd ₂ L)						(2Cd ²⁺ + L)	725	
Cd ²⁺	35.07	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Cd ₂ H ₂ L)						(2Cd ²⁺ + L + 2H ⁺)	725	
Cd ²⁺	39.94	Pot			25	H ₂ O, 0.15 M NaClO ₄		
(Cd ₂ H ₃ L)						(Cd ²⁺ + L + 3H ⁺)	725	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref	
CHART LIX									
Calix8-32C-1	(CH ₃) ₃ N ⁺ Ph	3.72	NMR	0.0	71.1	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	446, 447	
	(CH ₃) ₃ N ⁺ Ph (C ⁺ ₂ L)	3.66	NMR	0.0	69.9	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻), (C ⁺ = (CH ₃) ₂ N ⁺ Ph)		
	cation-5 ^f	4.28	NMR	0.0	82.0	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻)	447	
	cation-5 ^f (C ⁺ ₂ L)	4.23	NMR	0.0	80.8	25	D ₂ O, pD 7.3 (0.1 M phosphate), (anion = Cl ⁻), (C ⁺ = cation-5)	447	
Calix8-32C-2	Li ⁺	2.08	Spec			30	THF (anion = picrate)	451	
	Na ⁺	2.61	Spec			30	THF (anion = picrate)	451	
	K ⁺	3.11	Spec			30	THF (anion = picrate)	451	
	Cs ⁺	3.08	Spec			30	THF (anion = picrate)	451	
	cation-4 ^f	2.32	Spec			40	C ₂ H ₂ Cl ₄ (anion = BF ₄ ⁻)	372	
Py ₂ (1,4-B) ₄ A ₄ 32C6-1	Cu ²⁺	2.70	Spec			25	H ₂ O, 0.05 M MES buffer, pH 6.2	827	
A ₆ 32C6-1	H ⁺	>9.70(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	H ⁺	>9.65(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	H ⁺	9.60(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	H ⁺	9.25(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	H ⁺	4.15(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	H ⁺	3.55(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
A ₆ 32C6-2	H ⁺	10.85(1)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	10.60(2)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	9.80(3)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	9.05(4)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	7.40(5)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	6.65(6)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	>10.7(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	~10.7(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	9.85(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	9.60(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	7.90(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	7.30(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	A ₆ 32C8-1	H ⁺	10.70(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
		H ⁺	10.45(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
H ⁺		9.65(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		9.00(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		8.05(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		7.50(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		6.95(7)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		6.45(8)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
H ⁺		10.65(1)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		10.55(2)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		9.40(3)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		9.20(4)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		8.20(5)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		7.55(6)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		6.85(7)	Pot			25	H ₂ O, 0.1 M TsONa	783	
H ⁺		6.50(8)	Pot			25	H ₂ O, 0.1 M TsONa	783	
B ₂ 32C10-1		H ⁺	6.17	Pot			25	52.1 wt% MeOH-H ₂ O	599
CHART LX									
32C10-ene-1	Na ⁺	1.2	ISE			25	MeOH	479	
	K ⁺	2.54(1)	ISE			25	MeOH	479	
	K ⁺	2.2(2)	ISE			25	MeOH	479	
(1,3-B) ₂ 32C10-1	cation-19 ^f	2.59	NMR			25?	Me ₂ CO (anion = PF ₆ ⁻)	829	
	cation-20 ^f	2.88	NMR			25?	Me ₂ CO (anion = PF ₆ ⁻)	829	
(1,4-B) ₂ A ₂ 32C10-1	Na ⁺	2.76	Kin			30	<i>o</i> -C ₈ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	K ⁺	3.20	Kin			30	<i>o</i> -C ₈ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	Rb ⁺	2.54	Kin			30	<i>o</i> -C ₈ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	Cs ⁺	nm	Kin			30	<i>o</i> -C ₈ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
							H ₂ O	123, 271	
(1,3-B) ₃ 32C10-1	H ⁺	3.93	Pot			25	H ₂ O	273	
(1,3-B) ₃ 32C10-2	H ⁺	2.0	Pot			25	H ₂ O	273	
B33C11-1	Na ⁺	1.91	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	3.57	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	4.27	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Cs ⁺	3.88	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Ba ²⁺	4.30	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.37	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.49	Pot			25	MeOH (anion = SCN ⁻)	637	
	Na ⁺	1.82	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	K ⁺	3.79	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Rb ⁺	4.55	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
B ₂ 33C11-1	Cs ⁺	4.72	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	Ba ²⁺	>5.5	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.37	Pot			25	MeOH, 0.1 M Et ₄ NCl	384	
	guanidinium	1.36	Pot			25	MeOH (anion = SCN ⁻)	637	
	cation-19 ^f	4.84	Spec			25	MeCN (anion = PF ₆ ⁻)	808	
	cation-19 ^f	4.06	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	806, 807	
	Py33C11-1	H ⁺	3.36	Pot			25	H ₂ O	271
		Li ⁺	2.55	Pot			25	MeOH, 0.1 M Et ₄ NCl	384

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
Py33C11-2	Na ⁺	1.44	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	K ⁺	3.00	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Rb ⁺	3.28	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Cs ⁺	3.24	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	Ba ⁺	2.97	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	guanidinium	1.44	Pot			25	MeOH, 0.1 M Et ₄ NCl	384
	H ⁺	3.36	Pot			25	H ₂ O, 0.1 M HCl	385, 386
	H ⁺	~3.1	Pot			25	85.4 wt% EtOH-H ₂ O	386
	H ⁺	~2.7	Pot			25	51.2 wt% MeOH-H ₂ O	386
	H ⁺	~5.2	Pot			25	MeOH	386
A ₁₁ 33C11-1	H ⁺	9.79(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	9.48(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	9.02(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	8.64(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	8.06(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	6.44(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	4.49(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	3.58(8)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	2.76(9)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	2.26(10)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	1.7(11)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	10.17(1)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	9.64(2)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	9.01(3)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	8.20(4)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	7.90(5)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	6.32(6)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	4.38(7)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	3.27(8)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
	H ⁺	2.51(9)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763
H ⁺	2.47(10)	Pot			25	Me ₂ SO-H ₂ O (8:2/v.v), 0.15 M KClO ₄	763	
Co ²⁺	Co ²⁺	22.90 (Co ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L)	765
	Co ²⁺	35.83 (Co ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + 2H ⁺)	765
	Co ²⁺	40.91 (Co ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + 3H ⁺)	765
	Co ²⁺	12.72 (Co ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + H ₂ O)	765
	Co ²⁺	3.55 (Co ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Co ₂ L ⁺⁺ + OH ⁻)	765
	Ni ²⁺	31.07 (Ni ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L)	766
	Ni ²⁺	36.98 (Ni ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + H ⁺)	766
	Ni ²⁺	40.98 (Ni ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 2H ⁺)	766
	Ni ²⁺	46.44 (Ni ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 3H ⁺)	766
	Cu ²⁺	38.77 (Cu ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L)	830
	Cu ²⁺	45.28 (Cu ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + H ⁺)	830
	Cu ²⁺	51.18 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 2H ⁺)	830
	Cu ²⁺	53.86 (Cu ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 3H ⁺)	830
	Cu ²⁺	27.29 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + H ₂ O)	830
	Cu ²⁺	48.03 (Cu ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L)	830
	Cu ²⁺	40.62 (Cu ₃ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L + H ₂ O)	830
	Cu ²⁺	30.2 Cu ₃ L(OH) ₂	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L + H ₂ O)	830
	Cd ²⁺	23.63 (Cd ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L)	725
	Cd ²⁺	36.06 (Cd ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L + 2H ⁺)	725
	Cd ²⁺	41.39 (Cd ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cd ²⁺ + L + 3H ⁺)	725
Zn ²⁺	23.91 (Zn ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L)	811	
Zn ²⁺	36.66 (Zn ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ⁺)	811	
Zn ²⁺	42.17 (Zn ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 3H ⁺)	811	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref	
	Zn ²⁺	15.40 (Zn ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + H ₂ O)	811	
	Zn ²⁺	28.12 (Zn ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L)	763	
	Zn ²⁺	34.96 (Zn ₂ HL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + H ⁺)	763	
	Zn ²⁺	40.73 (Zn ₂ H ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 2H ⁺)	763	
	Zn ²⁺	45.17 (Zn ₂ H ₃ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 3H ⁺)	763	
	Zn ²⁺	49.61 (Zn ₂ H ₄ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 4H ⁺)	763	
	Zn ²⁺	16.75 (Zn ₂ LOH)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + H ₂ O)	763	
	Zn ²⁺	7.4 (Zn ₂ LOH)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (Zn ₂ L ⁴⁺ + OH ⁻)	763	
(1,4-B) ₄ A ₄ 34C4·1	Zn ²⁺	4.87 (Zn ₂ (OH) ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ₂ O)	811	
	Ni ²⁺	6.20	NMR			25?	EtOH	831	
CHART LXI									
(1,4-B) ₂ 34C10·1	Li ⁺	<2.40ppt	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Na ⁺	3.00	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	K ⁺	3.68	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Rb ⁺	3.56	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Cs ⁺	3.49	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	NH ₄ ⁺	3.59	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.17	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
(1,4-B) ₂ A ₂ 35C11·1	cation-20'	2.86	Spec			25?	Me ₂ CO (anion = PF ₆ ⁻)	832	
	Na ⁺	2.75	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	K ⁺	2.98	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	Rb ⁺	3.06	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
	Cs ⁺	2.85	Kin			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (86.8:13.2/v:v)	815	
Spher-36C·1	Li ⁺	7.86	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Na ⁺	8.36	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	K ⁺	9.23	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Rb ⁺	9.32	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	Cs ⁺	9.49	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	NH ₄ ⁺	8.76	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	CH ₃ NH ₃ ⁺	8.43	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.89	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	777	
K ₃ 36C9·triene·1	H ⁺	13.0(1)	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
	H ⁺	11.5(2)	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
	H ⁺	8.6(3)	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
	Ce ³⁺	11.4	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
	La ³⁺	10.4	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
	Cr ³⁺	10.1	Pot			24	H ₂ O·Diox (1:1/v:v)	739, 740	
B ₂ 36C12·1	cation-18'	3.30	Spec			25.5	Me ₂ CO (anion = PF ₆ ⁻)	806, 807	
CHART LXII									
(THF) ₂ 36C12·1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.16	Solv Extr-NMR (SCN ⁻ Anal)			0	CDCl ₃ (anion = SCN ⁻)	388	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.41	Solv Extr-NMR (SCN ⁻ Anal)			24	CDCl ₃ (anion = SCN ⁻)	388	
A ₁₂ 36C12·1	H ⁺	9.75(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	9.65(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	8.88(3)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	8.96(4)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	8.12(5)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	7.82(6)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	5.66(7)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	4.27(8)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	3.58(9)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	
	H ⁺	2.62(10)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	2.3(11)	Pot			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	1.0(12)	Calc'd			25	H ₂ O, 0.15 M NaClO ₄	830
	H ⁺	10.23(1)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	9.65(2)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	9.02(3)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	8.47(4)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	7.81(5)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	7.17(6)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	5.34(7)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	3.81(8)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	2.82(9)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	H ⁺	1.8(10)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄	763
	Co ²⁺	24.55 (Co ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L)	765
	Co ²⁺	31.29 (Co ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + H ⁺)	765
	Co ²⁺	37.62 (Co ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + 2H ⁺)	765
	Co ²⁺	43.45 (Co ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + 3H ⁺)	765
	Co ²⁺	48.76 (Co ₂ H ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + 4H ⁺)	765
	Co ²⁺	13.87 (Co ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Co ²⁺ + L + H ₂ O)	765
	Co ²⁺	3.05 (Co ₂ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Co ₂ L ⁴⁺ + OH ⁻)	765
	Ni ²⁺	32.09 (Ni ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L)	766
	Ni ²⁺	38.62 (Ni ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + H ⁺)	766
	Ni ²⁺	44.46 (Ni ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 2H ⁺)	766
	Ni ²⁺	48.95 (Ni ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 3H ⁺)	766
	Ni ²⁺	53.42 (Ni ₂ H ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Ni ²⁺ + L + 4H ⁺)	766
	Cu ²⁺	39.25 (Cu ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L)	830
	Cu ²⁺	47.09 (Cu ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + H ⁺)	830
	Cu ²⁺	53.96 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 2H ⁺)	830
	Cu ²⁺	58.07 (Cu ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 3H ⁺)	830
	Cu ²⁺	61.42 (Cu ₂ H ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Cu ²⁺ + L + 4H ⁺)	830
	Cu ²⁺	51.43 (Cu ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L)	830
	Cu ²⁺	55.38 (Cu ₃ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L + H ⁺)	830
	Cu ²⁺	42.53 (Cu ₃ LOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L + H ₂ O)	830
	Cu ²⁺	31.62 Cu ₃ L(OH) ₂	Pot			25	H ₂ O, 0.15 M NaClO ₄ (3Cu ²⁺ + L + 2H ₂ O)	830
	Zn ²⁺	26.27 (Zn ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L)	724
	Zn ²⁺	32.83 (Zn ₂ HL)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + H ⁺)	724
	Zn ²⁺	39.16 (Zn ₂ H ₂ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 2H ⁺)	724
	Zn ²⁺	44.81 (Zn ₂ H ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 3H ⁺)	724
	Zn ²⁺	49.99 (Zn ₂ H ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (2Zn ²⁺ + L + 4H ⁺)	724
	Zn ²⁺	16.09 (ZnLOH)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (Zn ²⁺ + L + H ₂ O)	724
	Zn ²⁺	32.25 (Zn ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L)	763
	Zn ²⁺	37.77 (Zn ₂ HL)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + H ⁺)	763
	Zn ²⁺	42.67 (Zn ₂ H ₂ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 2H ⁺)	763
	Zn ²⁺	47.67 (Zn ₂ H ₃ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v:v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 3H ⁺)	763

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Zn ²⁺	51.78 (Zn ₂ H ₄ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v/v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 4H ⁺)	763	
	Zn ²⁺	55.96 (Zn ₂ H ₄ L)	Pot			25	Me ₂ SO·H ₂ O (8:2/v/v), 0.15 M KClO ₄ (2Zn ²⁺ + L + 4H ⁺)	763	
A ₆ 38C6·1	H ⁺	>10.5(1)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	~10.5(2)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	10.15(3)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	9.45(4)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	7.65(5)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	6.95(6)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
	H ⁺	>10.3(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	~10.3(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	10.10(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	9.60(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	7.95(5)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
	H ⁺	7.30(6)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828	
(1,4-B) ₂ 40C12·1	Li ⁺	<2.40ppt	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Na ⁺	3.34	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	K ⁺	4.10	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Rb ⁺	3.93	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	Cs ⁺	3.92	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	NH ₄ ⁺	3.96	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.41	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674	
(A9C3) ₂ -1	Na ⁺	1.11	ISE			25	MeOH·H ₂ O (95:5)	140	
	K ⁺	<0.7	ISE			25	MeOH·H ₂ O (95:5)	140	
(A9C3) ₂ -2	Na ⁺	<0.1	ISE			25	MeOH·H ₂ O (95:5)	140	
	K ⁺	0.80	ISE			25	MeOH·H ₂ O (95:5)	140	
(A ₃ 9C3) ₂ -1	H ⁺	12.28(1)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	H ⁺	9.77(2)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	H ⁺	9.21(3)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	H ⁺	8.61(4)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	H ⁺	4.99(5)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	H ⁺	2.12(6)	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	Mn ²⁺	15.0	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	Co ²⁺	18.5	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	Ni ²⁺	21.5	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	Zn ²⁺	20.0	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
	Cd ²⁺	18.5	Pot			25	H ₂ O, 1.0 M KNO ₃	833	
(12C4) ₂ -1	Na ⁺	1.59	ISE			25	MeOH	105	
	K ⁺	1.72	ISE			25	MeOH	105	
(12C4) ₂ -2	Na ⁺	3.25	ISE			25	MeOH	105	
	K ⁺	1.82	ISE			25	MeOH	105	
(12C4) ₂ -3	Na ⁺	3.26	ISE			25	MeOH	105	
	K ⁺	1.73	ISE			25	MeOH	105	
(12C4) ₂ -4	Na ⁺	2.88	ISE			25	MeOH	105	
	K ⁺	1.90	ISE			25	MeOH	105	
(12C4) ₂ -5	Na ⁺	2.14	Cal	-22.59	-34.8	25	MeOH·H ₂ O (8:2)	834	
(12C4) ₂ -6	Na ⁺	2.33	Cal	-5.40	24.3	25	MeOH·H ₂ O (8:2)	834	
(12C4) ₂ -7	Na ⁺	2.41	Cal	-3.51	43.2	25	MeOH·H ₂ O (8:2)	834	
(12C4) ₂ -8	Na ⁺	1.84	Cal	-7.91	8.71	25	MeOH·H ₂ O (8:2)	834	
(12C4) ₂ -9	Na ⁺	2.02	Cal	-6.86	15.7	25	MeOH·H ₂ O (8:2)	834	
CHART LXIII									
(12C4)(A12C4)-1	Na ⁺	2.93	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(12C4)(A15C5)-1	Na ⁺	3.35	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(12C4)(A18C6)-1	Na ⁺	4.31	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(B12C4) ₂ -1	Na ⁺	4.92	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135	
	K ⁺	4.67	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135	
	Rb ⁺	4.51	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135	
	Cs ⁺	4.23	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135	
(A12C4) ₂ -1	Na ⁺	8.18	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(A12C4) ₂ -2	Na ⁺	4.95	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(A12C4) ₂ -3	H ⁺	9.8(1)	Pot			25	MeOH·H ₂ O (9:1)	140	
	H ⁺	5.4(2)	Pot			25	MeOH·H ₂ O (9:1)	140	
	Na ⁺	4.24	ISE			25	MeOH·H ₂ O (95:5)	140	
	K ⁺	2.37	ISE			25	MeOH·H ₂ O (95:5)	140	
(A12C4) ₂ -4	Na ⁺	3.77	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(A12C4) ₂ -5	Na ⁺	3.97	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(A12C4) ₂ -6	Na ⁺	3.68	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(A12C4) ₂ -7	Na ⁺	2.44	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(A12C4) ₂ -8	Na ⁺	3.25	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(A12C4) ₂ -9	Na ⁺	2.06	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(A12C4) ₂ -10	H ⁺	8.6(1)	Pot			25	MeOH·H ₂ O (9:1)	140	
	H ⁺	8.3(2)	Pot			25	MeOH·H ₂ O (9:1)	140	
	Na ⁺	2.63	ISE			25	MeOH·H ₂ O (95:5)	140	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K-mol	T, °C	conditions ^c	ref	
(A12C4) ₂ -11	K ⁺	2.97	ISE			25	MeOH·H ₂ O (95:5)	140	
	H ⁺	7.5(1)	Pot			25	MeOH·H ₂ O (9:1)	140	
	H ⁺	6.8(2)	Pot			25	MeOH·H ₂ O (9:1)	140	
	Na ⁺	1.99	ISE			25	MeOH·H ₂ O (95:5)	140	
(A12C4) ₂ -12	K ⁺	1.95	ISE			25	MeOH·H ₂ O (95:5)	140	
	Na ⁺	2.39	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(A12C4)(A15C5)-1	Na ⁺	4.44	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(A12C4)(A18C6)-1	Na ⁺	4.84	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(AT ₂ 12C4) ₂ -1	H ⁺	7.05(2)	Pot			25	H ₂ O, 0.1 M LiNO ₃ , (LH ⁺ + H ⁺)	182	
	H ⁺	≤17(1+2)				25	H ₂ O, 0.1 M LiNO ₃ , (L + 2H ⁺)	182	
	Cu ²⁺	·2.0 (CuHL)	Pot			25	H ₂ O, 0.1 M LiNO ₃ , (Cu ²⁺ + H ₂ L ²⁺)	182	
	Cu ²⁺	-1.8 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M LiNO ₃ , (Cu ²⁺ + CuHL ₃ ⁺)	182	
	Cu ²⁺	9.2 Cu ₂ (μ-OH)L	Pot			25	H ₂ O, 0.1 M LiNO ₃ , (Cu ₂ L ⁴⁺ + OH ⁻)	182	
(K ₂ A ₄ 13C4) ₂ -1	H ⁺	8.98(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201	
	H ⁺	8.51(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201	
	H ⁺	3.71(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201	
	H ⁺	2.78(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	201	
	Cu ²⁺	14.00 (Cu ₂ H ₄ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	201	
	Cu ²⁺	3.66 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	201	
	Cu ²⁺	·7.09 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	201	
(K ₂ A ₄ 14C4) ₂ -1	H ⁺	9.96(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (H ⁺ + H ₄ L = H ₆ L ⁺)	258	
	H ⁺	9.45(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (H ⁺ + H ₆ L ⁺ = H ₈ L ²⁺)	258	
	H ⁺	5.40(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (H ⁺ + H ₆ L = H ₇ L ³⁺)	258	
	H ⁺	4.62(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (H ⁺ + H ₇ L ³⁺ = H ₈ L ⁴⁺)	258	
	Cu ²⁺	14.54 (CuH ₄ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	9.58 (CuH ₃ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	0.25 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	17.79 (Cu ₂ H ₄ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	8.59 (Cu ₂ H ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	·1.34 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	258	
	Cu ²⁺	-1.343 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ , (2Cu ²⁺ + H ₄ L)	835	
	(15C5) ₂ -1 (Chart LXII)	Na ⁺	2.96	ISE			25	MeOH·H ₂ O (95:5)	140
(15C5) ₂ -2 (Chart LXII)	K ⁺	5.06	ISE			25	MeOH·H ₂ O (95:5)	140	
	K ⁺	3.07	Cal	·10.84	22.5	25	MeOH·H ₂ O (8:2)	834	
	Tl ⁺	2.37	Cal	·38.16	-82.7	25	MeOH·H ₂ O (8:2)	834	
(15C5)(A12C4)-1	Na ⁺	3.39	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(15C5)(A15C5)-1	Na ⁺	3.75	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
(15C5)(16C5)-1 (Chart LXV)	t-C ₄ H ₉ NH ₃ ⁺	2.88	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	346	
(15C5)(A18C6)-1	Na ⁺	4.38	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126	
CHART LXIV									
(B15C5) ₂ -1	K ⁺	2.92	Cal	·66.6	-168	25	MeOH·H ₂ O (8:2)	836	
	Tl ⁺	2.04	Cal	-102.05	-303.4	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -2	K ⁺	4.36	Cal	-44.9	-67.3	25	MeOH·H ₂ O (8:2)	836	
	Tl ⁺	3.17	Cal	·53.47	-118.8	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -3	Na ⁺	2.90	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	K ⁺	3.24	Cal	-60.3	-140	25	MeOH·H ₂ O (8:2)	836	
	K ⁺	4.17	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	Cs ⁺	2.62	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	Tl ⁺	2.32	Cal	·87.07	-247.8	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -4	K ⁺	3.40	Cal	·58.5	-131	25	MeOH·H ₂ O (8:2)	836	
	Tl ⁺	2.49	Cal	·77.24	-211.4	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -5	K ⁺	3.68	Cal	-57.7	-123	25	MeOH·H ₂ O (8:2)	836	
	Tl ⁺	2.69	Cal	·78.53	-212.0	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -6	Na ⁺	2.78	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	Na ⁺	2.83 (Na ₂ L)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	K ⁺	4.64	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
(B15C5) ₂ -7	Cs ⁺	2.89	ISE			25	MeOH·H ₂ O (9:1/w:w)	302	
	K ⁺	3.47	Cal	·37.0	-57.7	25	MeOH·H ₂ O (8:2)	836	
(B15C5) ₂ -8	Tl ⁺	2.10	Cal	·75.50	-226.6	25	MeOH·H ₂ O (8:2)	837	
	K ⁺	3.73	Cal	·39.79	-62.1	25	MeOH·H ₂ O (8:2)	837	
(B15C5) ₂ -9	Tl ⁺	1.90	Cal	·108.03	-326.2	25	MeOH·H ₂ O (8:2)	837	
	K ⁺	3.31	Cal	·49.4	-102	25	MeOH·H ₂ O (8:2)	836	
(B15C5) ₂ -10	Tl ⁺	1.99	Cal	·85.40	-248.5	25	MeOH·H ₂ O (8:2)	837	
	K ⁺	3.13	Cal	·52.8	-117	25	MeOH·H ₂ O (8:2)	836	
	Tl ⁺	2.13	Cal	·81.80	-233.6	25	MeOH·H ₂ O (8:2)	837	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
(B15C5) ₂ -11	K ⁺	3.14	Cal	-75.31	-192.6	25	MeOH·H ₂ O (8:2)	364
(B15C5) ₂ -13	K ⁺	3.56	Cal	-67.99	-159.9	25	MeOH·H ₂ O (8:2)	364
(B15C5) ₂ -15	K ⁺	3.12	Cal	-72.09	-182.1	25	MeOH·H ₂ O (8:2)	364
(B15C5) ₂ -16	K ⁺	2.79	Cal	-69.87	-181.0	25	MeOH·H ₂ O (8:2)	364
(B15C5) ₂ -17	Na ⁺	2.48	Spec			25	95% MeOH	838, 838a
	K ⁺	4.40	Spec			25	95% MeOH	838, 838a
	Rb ⁺	3.92	Spec			25	95% MeOH	838, 838a
	Cs ⁺	2.24	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -18	Na ⁺	4.77	Spec			25	95% MeOH	838, 838a
	K ⁺	5.02	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.61	Spec			25	95% MeOH	838, 838a
	Cs ⁺	3.00	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -19	Na ⁺	2.41	Spec			25	95% MeOH	838, 838a
	K ⁺	7.65	Spec			25	95% MeOH	838, 838a
	Rb ⁺	5.68	Spec			25	95% MeOH	838, 838a
	Cs ⁺	3.67	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -20	Na ⁺	3.61	Spec			25	95% MeOH	838, 838a
	K ⁺	5.26	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.67	Spec			25	95% MeOH	838, 838a
	Cs ⁺	2.19	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -21	Na ⁺	3.04	Spec			25	95% MeOH	838, 838a
	K ⁺	5.47	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.84	Spec			25	95% MeOH	838, 838a
	Cs ⁺	3.30	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -22	Na ⁺	2.32	Spec			25	95% MeOH	838, 838a
	K ⁺	5.60	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.53	Spec			25	95% MeOH	838, 838a
	Cs ⁺	2.34	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -23	Na ⁺	3.82	Spec			25	95% MeOH	838, 838a
	K ⁺	4.75	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.33	Spec			25	95% MeOH	838, 838a
	Cs ⁺	3.98	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -24	Na ⁺	3.39	Spec			25	95% MeOH	838, 838a
	K ⁺	4.68	Spec			25	95% MeOH	838, 838a
	Rb ⁺	4.61	Spec			25	95% MeOH	838, 838a
	Cs ⁺	2.17	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -25	Na ⁺	3.02	Spec			25	95% MeOH	838, 838a
	K ⁺	3.61	Spec			25	95% MeOH	838, 838a
	Rb ⁺	<2	Spec			25	95% MeOH	838, 838a
	Cs ⁺	<2	Spec			25	95% MeOH	838, 838a
(B15C5) ₂ -26	K ⁺	4.11	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -27	K ⁺	5.36	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -28	K ⁺	3.83	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -29	K ⁺	4.35	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -30	K ⁺	4.68	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -31	K ⁺	5.02	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -32	K ⁺	5.90	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -33	K ⁺	5.87	Spec			25	MeOH (anion = SCN ⁻)	377
(B15C5) ₂ -34	K ⁺	5.28	Spec			25	MeOH (anion = SCN ⁻)	375
	NH ₄ ⁺	2.28	Spec			25	MeOH (anion = SCN ⁻)	375
	L·(H ₂ LeuOCH ₃) [±]	1.34	Spec			25	MeOH (anion = Cl ⁻)	375
	D·(H ₂ LeuOCH ₃) [±]	1.33	Spec			25	MeOH (anion = Cl ⁻)	375
(B15C5) ₂ -35	K ⁺	5.66	Spec			25	MeOH (anion = SCN ⁻)	375
	NH ₄ ⁺	2.28	Spec			25	MeOH (anion = SCN ⁻)	375
	L·(H ₂ LeuOCH ₃) [±]	1.41	Spec			25	MeOH (anion = Cl ⁻)	375
	D·(H ₂ LeuOCH ₃) [±]	1.26	Spec			25	MeOH (anion = Cl ⁻)	375
	(H ₂ GlyOCH ₃) [±]	1.47	Spec			25	MeOH (anion = Cl ⁻)	375
(B15C5) ₂ -36	Na ⁺	6.38	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	9.20	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	8.57	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Cs ⁺	7.03	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Mg ²⁺	5.06	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ca ²⁺	5.20	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Sr ²⁺	5.41	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ba ²⁺	6.36	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ag ⁺	5.39	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Tl ⁺	8.10	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
(B15C5) ₂ -37	K ⁺	4.54	Cal	-42.59	-56.0	25	MeOH·H ₂ O (8:2)	837
	Tl ⁺	3.37	Cal	-50.42	-104.6	25	MeOH·H ₂ O (8:2)	837
(B15C5) ₂ -38	K ⁺	3.08	Cal	-43.93	-88.5	25	MeOH·H ₂ O (8:2)	837
	Tl ⁺	2.29	Cal	-58.58	-152.8	25	MeOH·H ₂ O (8:2)	837
(B15C5) ₂ -39	K ⁺	3.21	Cal	-53.81	-119.1	25	MeOH·H ₂ O (8:2)	837
	Tl ⁺	2.62	Cal	-38.87	-80.3	25	MeOH·H ₂ O (8:2)	837
(B15C5) ₂ -40	K ⁺	3.50	Cal	-51.38	-105.4	25	MeOH·H ₂ O (8:2)	837
	Tl ⁺	2.80	Cal	-46.53	-102.5	25	MeOH·H ₂ O (8:2)	837
(B15C5) ₂ -41	cation·18'	2.80	NMR			?	Me ₂ CO·d ₆ (anion = PF ₆ ⁻)	839

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
CHART LXV								
(B15C5) ₂ -42	H ⁺	11.6, 11.45(1)	Pot			25	H ₂ O, 0.1 M KCl	840
	H ⁺	9.0, 9.46(2)	Pot			25	H ₂ O, 0.1 M KCl	840
	H ⁺	7.7, 7.60(3)	Pot			25	H ₂ O, 0.1 M KCl	840
	H ⁺	3.2, 3.20(4)	Pot			25	H ₂ O, 0.1 M KCl	840
	Co ²⁺	8.4, 8.93	Pot			25	H ₂ O, 0.1 M KCl	840
	(CoHL)		Pot			25	H ₂ O, 0.1 M KCl, (Co ²⁺ + H ₂ L)	840
	Co ²⁺	13.3, 13.98	Pot			25	H ₂ O, 0.1 M KCl, (Co ²⁺ + H ₂ L)	840
	(CoL)		Pot			25	H ₂ O, 0.1 M KCl, (Ni ²⁺ + H ₂ L)	840
	Ni ²⁺	9.9, 10.39	Pot			25	H ₂ O, 0.1 M KCl, (Ni ²⁺ + H ₂ L)	840
	(NiHL)		Pot			25	H ₂ O, 0.1 M KCl, (Ni ²⁺ + H ₂ L)	840
	Ni ²⁺	15.1, 15.73	Pot			25	H ₂ O, 0.1 M KCl, (Ni ²⁺ + H ₂ L)	840
	(NiL)		Pot			25	H ₂ O, 0.1 M KCl, (Cu ²⁺ + H ₂ L)	840
	Cu ²⁺	18.5, 17.56	Pot			25	H ₂ O, 0.1 M KCl, (Cu ²⁺ + H ₂ L)	840
	(CuHL)		Pot			25	H ₂ O, 0.1 M KCl, (Cu ²⁺ + H ₂ L)	840
	Cu ²⁺	23.0, 22.75	Pot			25	H ₂ O, 0.1 M KCl, (Cu ²⁺ + H ₂ L)	840
	(CuL)		Pot			25	H ₂ O, 0.1 M KCl, (UO ₂ ²⁺ + H ₂ L)	840
	UO ₂ ²⁺	14.2, 13.59	Pot			25	H ₂ O, 0.1 M KCl, (UO ₂ ²⁺ + H ₂ L)	840
	(UO ₂ HL)		Pot			25	H ₂ O, 0.1 M KCl, (UO ₂ ²⁺ + H ₂ L)	840
	UO ₂ ²⁺	20.6, 20.19	Pot			25	H ₂ O, 0.1 M KCl, (UO ₂ ²⁺ + H ₂ L)	840
	(UO ₂ L)		Pot			25	H ₂ O, 0.1 M KCl, (UO ₂ ²⁺ + H ₂ L)	840
(B15C5) ₂ -43	Na ⁺	2.52	ISE			25?	CHCl ₃ -MeOH (1:4)	841
	K ⁺	5.20	ISE			25?	CHCl ₃ -MeOH (1:4)	841
(B15C5) ₂ -44	Li ⁺	4.18	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Na ⁺	6.24	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	K ⁺	5.28	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Rb ⁺	4.65	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Cs ⁺	4.38	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	NH ₄ ⁺	4.34	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.42	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
(B15C5) ₂ -45	K ⁺	6.90	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	842
	Rb ⁺	5.28	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	842
	Cs ⁺	4.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	842
	NH ₄ ⁺	4.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	842
(A15C5) ₂ -1	Na ⁺	4.62	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A15C5) ₂ -2	Na ⁺	3.44	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A15C5) ₂ -3	Na ⁺	3.28	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A15C5) ₂ -4	Na ⁺	3.35	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
	Na ⁺	2.82	ISE			25	MeOH-H ₂ O (9:1/w:w)	181, 843
	K ⁺	2.69	ISE			25	MeOH-H ₂ O (9:1/w:w)	181, 843
	Cs ⁺	3.07	ISE			25	MeOH-H ₂ O (9:1/w:w)	843
	Cs ⁺	3.78	ISE			25	MeOH-H ₂ O (9:1/w:w)	843
	(Cs ₂ L)		ISE			25	MeOH-H ₂ O (9:1/w:w)	843
(A15C5) ₂ -5	Na ⁺	3.21	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A15C5) ₂ -6	H ⁺	9.7(1)	Pot			25	MeOH-H ₂ O (9:1)	140
	H ⁺	4.1(2)	Pot			25	MeOH-H ₂ O (9:1)	140
	Na ⁺	2.72	ISE			25	MeOH-H ₂ O (95:5)	140
	K ⁺	4.37	ISE			25	MeOH-H ₂ O (95:5)	140
(A15C5) ₂ -7	Na ⁺	4.73	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A15C5) ₂ -8	Na ⁺	3.77	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A15C5) ₂ -9	Na ⁺	3.32	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A15C5) ₂ -10	Na ⁺	4.22	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A15C5) ₂ -11	NH ₄ ⁺	2.11(1)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	NH ₄ ⁺	4.48(2)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	L-valine methyl ester	3.61(1)	Spec			25	95% MeOH	844
	L-valine methyl ester	5.62(2)	Spec			25	95% MeOH	844
	D-valine methyl ester	3.34(1)	Spec			25	95% MeOH	844
	D-valine methyl ester	5.64(2)	Spec			25	95% MeOH	844
(A15C5) ₂ -12	NH ₄ ⁺	2.38(1)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	NH ₄ ⁺	3.58(2)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	L-valine methyl ester	5.91(1)	Spec			25	95% MeOH	844
	L-valine methyl ester	4.94(2)	Spec			25	95% MeOH	844
	D-valine methyl ester	6.13(1)	Spec			25	95% MeOH	844
	D-valine methyl ester	5.66(2)	Spec			25	95% MeOH	844
(A15C5) ₂ -13	Na ⁺	3.63	ISE			25	MeOH-H ₂ O (9:1/w:w)	181, 843

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	K ⁺	3.70	ISE			25	MeOH-H ₂ O (9:1/w:w)	181, 843	
	Cs ⁺	3.42	ISE			25	MeOH-H ₂ O (9:1/w:w)	843	
	Cs ⁺	3.10							
	(C ₈ L)		ISE			25	MeOH-H ₂ O (9:1/w:w)	843	
(A15C5) ₂ -14	H ⁺	8.4(1)	Pot			25	MeOH-H ₂ O (9:1)	140	
	H ⁺	7.5(2)	Pot			25	MeOH-H ₂ O (9:1)	140	
	Na ⁺	3.89	ISE			25	MeOH-H ₂ O (95:5)	140	
	K ⁺	3.66	ISE			25	MeOH-H ₂ O (95:5)	140	
(A15C5) ₂ -15	Na ⁺	3.95	ISE			25	MeOH-H ₂ O (95:5)	140	
	K ⁺	3.73	ISE			25	MeOH-H ₂ O (95:5)	140	
	H ⁺	7.1(1)	Pot			25	MeOH-H ₂ O (9:1)	140	
	H ⁺	6.3(2)	Pot			25	MeOH-H ₂ O (9:1)	140	
CHART LXVI									
(A15C5)(B15C5)·1	Na ⁺	3.10	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	K ⁺	3.16	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	Cs ⁺	3.23	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
(A15C5)(B18C6)·1	Na ⁺	2.93	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	Na ⁺	2.93							
	(Na ₂ L)		ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	K ⁺	4.66	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	K ⁺	2.85							
	(K ₂ L)		ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	Cs ⁺	3.21	ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
	Cs ⁺	3.06							
	(C ₈ L)		ISE			25	MeOH-H ₂ O (9:1/w:w)	394	
(A15C5)(A18C6)·1 (Chart LXV)	Na ⁺	4.66	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144	
(16C5) ₂ -1	Na ⁺	2.90	NMR	-9.6	21.3	5	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.42							
	(Na ₂ L)		NMR			5	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	2.88	NMR			20	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.26							
	(Na ₂ L)		NMR			20	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	2.74	NMR			34	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.49							
	(Na ₂ L)		NMR			34	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	2.68	NMR			50	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.39							
	(Na ₂ L)		NMR			50	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	2.58	NMR			65	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.60							
	(Na ₂ L)		NMR			65	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	2.54	NMR			80	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
	Na ⁺	1.41							
	(Na ₂ L)		NMR			80	Py, I < 0.08 (anion = ClO ₄ ⁻)	465	
(Nap16C5) ₂ -1	Li ⁺	4.32	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	5.38	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	7.34	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Cs ⁺	6.72	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	NH ₄ ⁺	6.41	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
(A ₆ 16C5) ₂ -1	H ⁺	9.38(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	9.37(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	8.58(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	6.90(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(6)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
(A ₆ 16C5) ₂ -2	H ⁺	10.11(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	9.82(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	9.38(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	8.66(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	6.52(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	5.67(6)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	3.93(7)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(8)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(9)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(10)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
(K ₂ A ₆ 16C5) ₂ -1	H ⁺	10.12(1)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	9.87(2)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	9.20(3)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	8.60(4)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	7.08(5)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	5.81(6)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<3(7)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(8)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
	H ⁺	<2(9)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
[(H ₄ Nap) ₂ 17C5] ₂ -1	Li ⁺	4.30	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	Na ⁺	5.11	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	
	K ⁺	6.11	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	Rb ⁺	5.59	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	4.92	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	5.00	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
[(H ₄ Nap) ₂ 17C5] ₂ -2	Li ⁺	3.49	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	4.71	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	6.62	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Rb ⁺	5.59	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	3.93	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	5.00	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
[(H ₄ Nap) ₂ T ₂ 17C5] ₂ -1	Li ⁺	3.76	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	4.22	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	4.26	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Rb ⁺	3.15	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	<2.20	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	2.85	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
(18C6) ₂ -1 (Chart LXII)	Na ⁺	4.00	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	5.83	ISE			25	MeOH·H ₂ O (95:5)	140
(18C6)(A12C4)-1 (Chart LXIII)	Na ⁺	4.10	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(18C6)(A15C5)-1 (Chart LXIII)	Na ⁺	4.12	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(18C6)(A18C6)-1 (Chart LXIII)	Na ⁺	4.21	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(18C6)(19C6)-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.66	Solv Extr-NMR (SCN ⁻ Anal)			25?	CDCl ₃ (anion = SCN ⁻)	346
(18C6)(20C6)-1	Li ⁺	4.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	Na ⁺	6.02	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	K ⁺	7.62	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	Rb ⁺	6.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	Cs ⁺	5.99	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	6.93	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	CN ₃ NH ₃ ⁺	5.59	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.47	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	498
CHART LXVII								
(B18C6) ₂ -1	Na ⁺	3.84	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Na ⁺	3.13 (Na ₂ L)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	4.98	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	4.14 (K ₂ L)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Cs ⁺	4.07	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
(B18C6) ₂ -2	Na ⁺	3.49	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Na ⁺	3.15 (Na ₂ L)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	5.04	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	K ⁺	3.93 (K ₂ L)	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
	Cs ⁺	4.20	ISE			25	MeOH·H ₂ O (9:1/w:w)	302
(B18C6) ₂ -3	Na ⁺	6.33	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	8.03	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	7.79	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Cs ⁺	8.54	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Mg ²⁺	5.44	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ca ²⁺	6.93	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Sr ²⁺	9.11	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
(B18C6) ₂ -4	Ba ²⁺	8.00	Solv Extr·UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ag ⁺	6.21	Solv Extr·UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Tl ⁺	7.40	Solv Extr·UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Li ⁺	4.18	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Na ⁺	5.18	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	K ⁺	7.24	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Rb ⁺	>6.42	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Cs ⁺	5.59	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	NH ₄ ⁺	6.65	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.80	Solv Extr·UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
(B18C6) ₂ -5	NH ₄ ⁺	6.83	Solv Extr·UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.95	Solv Extr·UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	643
(Nap18C6) ₂ -1 (Chart LXVI)	Li ⁺	4.15	Solv Extr·UV (Pic Anal)			24·26	CDCl ₃ (anion = picrate)	498
	Na ⁺	5.73	Solv Extr·UV (Pic Anal)			24·26	CDCl ₃ (anion = picrate)	498
	K ⁺	7.38	Solv Extr·UV (Pic Anal)			24·26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	6.81	Solv Extr·UV (Pic Anal)			24·26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	6.11	Solv Extr·UV (Pic Anal)			24·26	CDCl ₃ (anion = picrate)	498
(A18C6) ₂ -1	Na ⁺	3.80	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A18C6) ₂ -2	Na ⁺	3.75	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A18C6) ₂ -3	H ⁺	10.0(1)	Pot			25	MeOH·H ₂ O (9:1)	140
	H ⁺	5.3(2)	Pot			25	MeOH·H ₂ O (9:1)	140
(A18C6) ₂ -4	Na ⁺	3.20	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	4.83	ISE			25	MeOH·H ₂ O (95:5)	140
	Na ⁺	4.87	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
	Na ⁺	4.38	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
	Na ⁺	4.32	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A18C6) ₂ -6	Na ⁺	3.67	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	144
(A18C6) ₂ -7	Na ⁺	3.77	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A18C6) ₂ -8	NH ₄ ⁺	3.56(1)	Spec			25	95% MeOH (anion = Cl ⁻)	844
(A18C6) ₂ -9	NH ₄ ⁺	4.19(2)	Spec			25	95% MeOH (anion = Cl ⁻)	844
(A18C6) ₂ -10	L-valine methyl ester	4.18(1)	Spec			25	95% MeOH	844
	L-valine methyl ester	4.54(2)	Spec			25	95% MeOH	844
	D-valine methyl ester	4.24(1)	Spec			25	95% MeOH	844
	D-valine methyl ester	4.87(2)	Spec			25	95% MeOH	844
	Na ⁺	3.74	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
	Na ⁺	3.10	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
	K ⁺	4.54	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
	K ⁺	3.08	(K ₂ L) ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
	Cs ⁺	3.36	ISE			25	MeOH·H ₂ O (9:1/w:w)	843
	Cs ⁺	3.37	(Cs ₂ L) ISE			25	MeOH·H ₂ O (9:1/w:w)	843
(A18C6) ₂ -11	Na ⁺	3.79	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(A18C6) ₂ -12	Na ⁺	3.56	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
	K ⁺	4.75	ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
(A18C6) ₂ -13	K ⁺	3.07	(K ₂ L) ISE			25	MeOH·H ₂ O (9:1/w:w)	181, 843
	Cs ⁺	3.66	ISE			25	MeOH·H ₂ O (9:1/w:w)	843
	Cs ⁺	3.14	(Cs ₂ L) ISE			25	MeOH·H ₂ O (9:1/w:w)	843
	H ⁺	8.8(1)	Pot			25	MeOH·H ₂ O (9:1)	140
	H ⁺	8.2(2)	Pot			25	MeOH·H ₂ O (9:1)	140
(A18C6) ₂ -14	Na ⁺	4.20	ISE			25	MeOH·H ₂ O (95:5)	140
	K ⁺	5.80	ISE			25	MeOH·H ₂ O (95:5)	140
	H ⁺	7.8(1)	Pot			25	MeOH·H ₂ O (9:1)	140
	H ⁺	6.8(2)	Pot			25	MeOH·H ₂ O (9:1)	140
	Na ⁺	4.02	ISE			25	MeOH·H ₂ O (95:5)	140
(A18C6) ₂ -15	K ⁺	5.52	ISE			25	MeOH·H ₂ O (95:5)	140
	+H ₃ N(CH ₂) ₃ NH ₃ ⁺	~5.3	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	~5.5	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
	+H ₃ N(CH ₂) ₅ NH ₃ ⁺	~5.5	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	~5.2	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
	+H ₃ N(CH ₂) ₇ NH ₃ ⁺	~4.7	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	~4.9	Fluor			?	CHCl ₃ -MeOH (1:1/v:v)	845
(A ₆ 18C6)(B15C5)-1	H ⁺	9.66(1)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846
	H ⁺	9.13(2)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846
	H ⁺	7.75(3)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	H ⁺	4(4)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846
	H ⁺	~2(5)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846
	H ⁺	~1(6)	Polg			25	H ₂ O, 0.2 M NaClO ₄	460, 846
	HO ₂ C(CH ₂) ₃ NH ₃ ⁺	2.01	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 7-8	460, 846
	HO ₂ C(CH ₂) ₅ NH ₃ ⁺	2.02	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 7-8	460, 846
	Gly* ^g	2.18	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 6.5-8	460, 846
	β -Ala* ^g	2.04	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 7-8	460, 846
	Gly-Gly* ^g	1.84	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 7-8.5	460, 846
	Dopamine ⁺	4.47	Polg			25	H ₂ O, 0.2 M NaClO ₄ , Tris buffer, pH 7-8	460, 846
(B19C5) ₂ -1	K ⁺	1.34	ISE			25?	Me ₂ CO, 0.01 M Et ₄ NClO ₄ (anion = PF ₆ ⁻)	736
	K ⁺	-0.12 (K ₂ L)	ISE			25?	Me ₂ CO, 0.01 M Et ₄ NClO ₄ (anion = PF ₆ ⁻)	736
(19C6)(13C4)-1 (Chart LXVI)	Na ⁺	2.15(1)	NMR			13.4	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.30(2)	NMR			13.4	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.90(1)	NMR			23.7	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.26(2)	NMR			23.7	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.78(1)	NMR			33.1	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	1.42	NMR			33.1	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
(19C6) ₂ -1 (chart LXVI)	Na ⁺	3.25	NMR			18.6	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.27 (Na ₂ L)	NMR			18.6	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.96	NMR			31.2	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.15 (Na ₂ L)	NMR			31.2	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.65	NMR			45.3	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
	Na ⁺	2.02 (Na ₂ L)	NMR			45.3	Py, $I < 0.08$ (anion = ClO ₄ ⁻)	465
(20C6)(29C4)-1 (Chart LXVIII)	K ⁺	1.11	NMR			20	D ₂ O/MeOD- <i>d</i> ₃ (6:4/v:v)	847
	K ⁺	1.95	NMR			20	D ₂ O/MeOD- <i>d</i> ₃ (4:6/v:v)	847
	K ⁺	2.44	NMR			20	D ₂ O/MeOD- <i>d</i> ₃ (2:8/v:v)	847
	K ⁺	3.25	NMR			20	MeOD- <i>d</i> ₃	847
(Nap20C6)(Nap21C5)-1	Li ⁺	4.26	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Na ⁺	6.46	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	K ⁺	8.11	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Rb ⁺	6.96	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	Cs ⁺	5.72	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
	NH ₄ ⁺	6.90	Solv Extr-UV (Pic Anal)			24-26	CDCl ₃ (anion = picrate)	498
(21C7)(A12C4)-1 (chart LXIII)	Na ⁺	2.94	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(21C7)(A15C5)-1 (chart LXIII)	Na ⁺	3.71	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(21C7)(A18C6)-1 (chart LXIII)	Na ⁺	4.26	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(B22C6) ₂ -1	Na ⁺	1.83	ISE			25?	MeOH, (anion = Cl ⁻)	736
	Na ⁺	1.59 (Na ₂ L)	ISE			25?	MeOH, (anion = Cl ⁻)	736
	K ⁺	3.16	ISE			25?	Me ₂ CO, 0.01 M Et ₄ NClO ₄ (anion = PF ₆ ⁻)	736
	K ⁺	2.24 (K ₂ L)	ISE			25?	Me ₂ CO, 0.01 M Et ₄ NClO ₄ (anion = PF ₆ ⁻)	736
	K ⁺	2.18	ISE			25?	MeOH, (anion = Cl ⁻)	736
	K ⁺	1.85 (K ₂ L)	ISE			25?	MeOH, (anion = Cl ⁻)	736
	Hg ²⁺ , 2CN ⁻	1.04	NMR	-30.5	-77.4	15	Me ₂ CO- <i>d</i> ₆ /C ₆ D ₆ (1:1/v:v)	736
	Hg ²⁺ , 2CN ⁻	2.04 [Hg(CN) ₂] ₂ L	NMR	-30.5	-69.0	15	Me ₂ CO- <i>d</i> ₆ /C ₆ D ₆ (1:1/v:v)	736
CHART LXVIII								
Pseudo (B22C6) ₂ -1	Li ⁺	3.63	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Na ⁺	4.40	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	K ⁺	6.06	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Rb ⁺	5.47	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Cs ⁺	4.72	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	NH ₄ ⁺	5.71	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.31	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
Pseudo(B23C6) ₂ -1	Li ⁺	3.49	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f kJ/mol	ΔS_f J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	3.85	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	K ⁺	4.91	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Rb ⁺	5.14	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	Cs ⁺	4.81	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	NH ₄ ⁺	5.25	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.29	Solv Extr-UV (Pic Anal)			24	CHCl ₃ (anion = picrate)	674
(24C8)(A12C4)·1 (Chart LXIII)	Na ⁺	2.91	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(24C8)(A15C5)·1 (Chart LXIII)	Na ⁺	3.72	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
(24C8)(A18C6)·1 (Chart LXIII)	Na ⁺	4.31	ISE			25	99% MeOH, 0.01 M Me ₄ NOH	126
Cat[Phen(1,4-B) ₂ 30C8] ₂ ·1	H ⁺	8.5(1)	NMR			?	CD ₂ Cl ₂ /MeCN- <i>d</i> ₃ (7:3)	848
	H ⁺	~1.5(2)	NMR			?	CD ₂ Cl ₂ /MeCN- <i>d</i> ₃ (7:3)	848
	Li ⁺	5.8	Spec			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
	Cu ⁺	>14	Calc'd			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
	Zn ²⁺	6.5	Spec			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
	Ag ⁺	9.3	Pot			20	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
	Ag ⁺	>7	Spec			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
	Cd ²⁺	>7	Spec			25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.01 M Et ₄ NClO ₄	819
(A15C5) ₂ (15C5)·1	NH ₄ ⁺	3.77(1)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	NH ₄ ⁺	5.52(2)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	L-valine methyl ester	3.22(1)	Spec			25	95% MeOH	844
	L-valine methyl ester	5.39(2)	Spec			25	95% MeOH	844
	D-valine methyl ester	3.25(1)	Spec			25	95% MeOH	844
	D-valine methyl ester	5.43(2)	Spec			25	95% MeOH	844
(A18C6) ₂ (18C6)·1	NH ₄ ⁺	1.81(1)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	NH ₄ ⁺	5.04(2)	Spec			25	95% MeOH (anion = Cl ⁻)	844
	L-valine methyl ester	2.71(1)	Spec			25	95% MeOH	844
	L-valine methyl ester	6.33(2)	Spec			25	95% MeOH	844
	D-valine methyl ester	2.93(1)	Spec			25	95% MeOH	844
	D-valine methyl ester	6.04(2)	Spec			25	95% MeOH	844
CHART LXIX								
poly(B12C4)·1	Na ⁺	6.22	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	K ⁺	5.73	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	Rb ⁺	5.52	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
	Cs ⁺	5.22	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	135
poly(B15C5)·1	Na ⁺	6.72	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	10.3	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	9.64	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Cs ⁺	7.62	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Mg ²⁺	5.32	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ca ²⁺	6.61	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Sr ²⁺	8.04	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ba ²⁺	9.22	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379
	Ag ⁺	6.63	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
	Tl ⁺	9.13	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380
poly(B18C6)·1	Na ⁺	6.53	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	K ⁺	8.39	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378
	Rb ⁺	8.03	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
poly(B18C6)-2	Cs ⁺	7.80	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	378	
	Mg ²⁺	6.34	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379	
	Ca ²⁺	8.42	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379	
	Sr ²⁺	10.6	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379	
	Ba ²⁺	10.9	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	379	
	Ag ⁺	7.03	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380	
	Tl ⁺	8.38	Solv Extr-UV (Pic Anal)			25	CHCl ₃ (anion = picrate)	380	
	Li ⁺	6.23	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	Na ⁺	6.30	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	Rb ⁺	7.08	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	Cs ⁺	6.95	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	Co ²⁺	<3.70	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	NH ₄ ⁺	6.74	Solv Extr-UV (Pic Anal)			25?	D ₂ O sat'd CDCl ₃ (anion = picrate)	639	
	(Phthal) ₂ (18C6)-1	Li ⁺	none	Spec			?	CHCl ₃ (addition of cation to ligand in CHCl ₃ does not affect spectra)	849
	Na ⁺	none	Spec			?	as above	849	
	K ⁺	none	Spec			?	as above	849	
	Rb ⁺	none	Spec			?	as above	849	
	Cs ⁺	none	Spec			?	as above	849	
	Be ²⁺	none	Spec			?	as above	849	
	Mg ²⁺	none	Spec			?	as above	849	
	Ca ²⁺	none	Spec			?	as above	849	
	Sr ²⁺	none	Spec			?	as above	849	
	Ba ²⁺	none	Spec			?	as above	849	
(Phthal) ₂ (18C6)-2	Li ⁺	none	Spec			?	CHCl ₃ (addition of cation to ligand in CHCl ₃ does not affect spectra)	849	
	Na ⁺	none	Spec			?	as above	849	
	K ⁺	none	Spec			?	as above	849	
	Rb ⁺	none	Spec			?	as above	849	
	Cs ⁺	none	Spec			?	as above	849	
	Be ²⁺	none	Spec			?	as above	849	
	Mg ²⁺	none	Spec			?	as above	849	
	Ca ²⁺	none	Spec			?	as above	849	
	Sr ²⁺	none	Spec			?	as above	849	
	Ba ²⁺	none	Spec			?	as above	849	
CHART LXX									
(15C5) ₄ -1	Li ⁺	6.40(1)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	350, 850	
	Li ⁺	0.64(2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	350, 850	
	Na ⁺	6.00(1)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	350, 850	
	Na ⁺	2.26(2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	350, 850	
	K ⁺	8.20(1+2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	350, 850	
	Rb ⁺	8.36(1+2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	350, 850	
	Cs ⁺	7.95(1+2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	850	
(18C6) ₄ -1	Li ⁺	6.76	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850	
	Na ⁺	6.98	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850	
	K ⁺	7.81	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850	
	Rb ⁺	7.24(1)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850	
	Rb ⁺	4.53(2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	850	
	Cs ⁺	7.20(1)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850	
	Cs ⁺	3.34(2)	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 8:4 complex)	850	
(18C6) ₄ -2	Li ⁺	5.99	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851	
	Na ⁺	6.21	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851	
	K ⁺	7.56	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
poly[(18C6) ₄]-1	Rb ⁺	7.02	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Cs ⁺	6.43	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Li ⁺	5.61	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Na ⁺	6.03	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	K ⁺	7.68	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
(21C7) ₄ -1	Rb ⁺	6.85	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Cs ⁺	6.02	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Li ⁺	7.20	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850
	Na ⁺	6.46	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850
	K ⁺	7.30	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850
(21C7) ₄ -2	Rb ⁺	7.42	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850
	Cs ⁺	7.73	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion=picrate) (actually 4:4 complex)	850
	Li ⁺	5.65	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Na ⁺	6.29	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	K ⁺	6.95	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
poly[(21C7) ₄]-1	Rb ⁺	7.47	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Cs ⁺	7.52	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Li ⁺	5.80	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Na ⁺	5.90	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	K ⁺	6.60	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
A[1.1.1]-1	Rb ⁺	7.40	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
	Cs ⁺	7.50	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	851
A ₂ [1.1.C ₇]-1	H ⁺	>13(1)	Pot			25	H ₂ O, 0.5 M NaCl	852
	H ⁺	6.20(2)	Pot			25	H ₂ O, 0.5 M NaCl	852
A ₂ [1.1.1]-1	H ⁺	<2(3)	Pot			25	H ₂ O, 0.5 M NaCl	852
	H ⁺	12.00(1)	Pot	-54.0(Cal)	48.5	25	H ₂ O, 0.15 M NaCl	853
	H ⁺	7.86(2)	Pot	-44.8(Cal)	~0	25	H ₂ O, 0.15 M NaCl	853
	H ⁺	<13(1)	Pot			25	Me ₂ SO·H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
	H ⁺	4.1(2)	Pot			25	Me ₂ SO·H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
A ₂ [1.1.1]-1	H ⁺	>13.5(1)	Pot			25	H ₂ O, 0.15 M NaCl	854
	H ⁺	11.21(2)	Pot			25	H ₂ O, 0.15 M NaCl	854
	H ⁺	14.0(1)	Pot			25	H ₂ O·Me ₂ SO (50:50/mol:mol), 0.15 M NaCl	854
A ₃ [1.1.1]-1	H ⁺	8.2(2)	Pot			25	H ₂ O·Me ₂ SO (50:50/mol:mol), 0.15 M NaCl	854
	H ⁺	12.48(1)	Pot			25	H ₂ O, 0.15 M NaCl	855, 856
A ₃ [1.1.1]-2	H ⁺	9.05(2)	Pot			25	H ₂ O, 0.15 M NaCl	855, 856
	H ⁺	<1(3)	Pot			25	H ₂ O, 0.15 M NaCl	855, 856
	Li ⁺	4.8	Pot			25	H ₂ O, 0.15 M NaCl	855, 856
	H ⁺	behaves as a very strong base(1)	Pot			25	H ₂ O, 0.5 M KNO ₃	857, 876
	H ⁺	8.41(2)	Pot			25	H ₂ O, 0.5 M KNO ₃	857, 876
A ₃ [1.1.1]-3	H ⁺	<2(3)	Pot			25	H ₂ O, 0.5 M KNO ₃	857, 876
	H ⁺	14.8(1)	Pot			25	Me ₂ SO·H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
	H ⁺	5.6(2)	Pot			25	Me ₂ SO·H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
	Na ⁺	none	NMR			25	H ₂ O·D ₂ O (1:1/v:v)	857, 876
	K ⁺	none	NMR			25	H ₂ O·D ₂ O (1:1/v:v)	857, 876
	Be ²⁺	none	NMR			25	H ₂ O·D ₂ O (1:1/v:v)	857, 876
	Mg ²⁺	nm	NMR			25	H ₂ O·D ₂ O (1:1/v:v)	857, 876
	Al ³⁺	none	NMR			25	H ₂ O·D ₂ O (1:1/v:v)	857, 876
	H ⁺	11.83(1)	Pot	-54.4(Cal)	185.3	25	H ₂ O, 0.15 M NaCl	858, 859
	H ⁺	9.53(2)	Pot	-42.7(Cal)	164.3	25	H ₂ O, 0.15 M NaCl	858, 859
A ₂ T[1.1.1]-1	H ⁺	3.43(3)	Pot	-13.0(Cal)	92.7	25	H ₂ O, 0.15 M NaCl	858, 859
	H ⁺	nm	Pot			25	Me ₂ SO·H ₂ O (50:50/mol:mol), 0.15 M NaCl (low solubility)	853
	Li ⁺	3.2	Pot	-2.1(Cal)	54.2	25	H ₂ O, 0.15 M NaCl	858, 859
	Na ⁺	none	Pot			25	H ₂ O, 0.15 M NaCl	858
	K ⁺	none	Pot			25	H ₂ O, 0.15 M NaCl	858
	Ni ²⁺	none	Pot			25	H ₂ O, 0.15 M NaCl	858
	Al ³⁺	none	Pot			25	H ₂ O, 0.15 M NaCl	858
	H ⁺	11.91(1)	Pot	-55.6(Cal)	40.7	25	H ₂ O, 0.5 M NaCl	860, 876
	H ⁺	8.78(2)	Pot	-48.1(Cal)	7.02	25	H ₂ O, 0.5 M NaCl	860, 876

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	H ⁺	12.7(1)	Pot			25	Me ₂ SO-H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
	H ⁺	5.5(2)	Pot			25	Me ₂ SO-H ₂ O (50:50/mol:mol), 0.15 M NaCl	853
[2.1.C ₅]-1	Cu ²⁺	18.2	Pot	-58.6(Cal)	152	25	H ₂ O, 0.5 M NaCl	860, 876
	Li ⁺	1.72	Ag ⁺ ISE			25	DEF, 0.05 M Et ₄ NClO ₄	861
	Li ⁺	1.85	Ag ⁺ ISE			25	DMAC, 0.05 M Et ₄ NClO ₄	861
	Li ⁺	1.80	Ag ⁺ ISE			25	DMF, 0.05 M Et ₄ NClO ₄	861
	Li ⁺	2.80	NMR			25	DMF (anion = ClO ₄ ⁻)	862, 863
	Na ⁺	2.52	Pot			25	DEF	407
	Na ⁺	2.05	Pot			25	DMAC	407
	Na ⁺	2.87	Pot			25	DMF, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Na ⁺	5.08	Pot			25	MeCN, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Li ⁺	4.15	Ag ⁺ ISE			25	MeCN, 0.05 M Et ₄ NClO ₄	861
	Li ⁺	3.00	Ag ⁺ ISE			25	MeOH, 0.05 M Et ₄ NClO ₄	861
	Na ⁺	3.98	Pot			25	Me ₂ CO, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Na ⁺	3.76	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Na ⁺	5.12	Pot			25	PC, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Na ⁺	3.72	Pot			25	Py, 0.05 M Et ₄ NClO ₄ (anion = ClO ₄ ⁻)	862, 864
	Ag ⁺	4.95	ISE			25	DEF, 0.05 M Et ₄ NClO ₄	861
	Ag ⁺	4.45	ISE			25	DMAC, 0.05 M Et ₄ NClO ₄	861
	Ag ⁺	5.23	ISE			25	DMF, 0.05 M Et ₄ NClO ₄	861
	Ag ⁺	5.19	Pot			25	DMF, 0.05 M Et ₄ NClO ₄	864
	Ag ⁺	4.29	ISE			25	MeCN, 0.05 M Et ₄ NClO ₄	861
	Ag ⁺	4.55	Pot			25	MeCN, 0.05 M Et ₄ NClO ₄	864
	Ag ⁺	8.58	Pot			25	Me ₂ CO, 0.05 M Et ₄ NClO ₄	864
	Ag ⁺	7.69	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄	861
	Ag ⁺	7.62	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	864
	Ag ⁺	<2	Pot			25	Py, 0.05 M Et ₄ NClO ₄	864
[2.1.1]-1	H ⁺	12.65(1)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	H ⁺	8.46(2)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Li ⁺	12.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494
	Li ⁺	av 12.08	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate), L competes with Bridged Spher-8	494
	Li ⁺	av 12.29	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate), L competes with Bridged Spher-9 494	494
	Li ⁺	7.90	Pot	-33.9(Cal)	36.9	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Li ⁺	12.86	Pot			25	PC	865
	Li ⁺	13.7	Pot	-70.6(Cal)	24.2	25	PC, 0.05 M Et ₄ NClO ₄	293
	Na ⁺	5.10	Pot			25	DEF	407
	Na ⁺	4.74	Pot			25	DMAC	407
	Na ⁺	5.17	Pot			25	DMF	865
	Na ⁺	4.4	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Na ⁺	8.74	ISE	-52.9(Cal)	-10.7	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Na ⁺	6.64	ISE	-33.1(Cal)	15.4	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Na ⁺	4.52	Pot			25	Me ₂ SO	865
	Na ⁺	8.40	Pot			25	PC	865
	Na ⁺	8.90	Pot	-52.5(Cal)	-6.4	25	PC, 0.05 M Et ₄ NClO ₄	293
	K ⁺	1.51	Pot			25	DMF	865
	K ⁺	3.50(1)	Cal	-29.3	-31.5	25	MeCN	408
	K ⁺	2.24(2)	ISE	-4.2(Cal)	32.2	25	MeCN, 0.05 M Et ₄ NClO ₄	107(logK ₂),408
	K ⁺	2.36	Cal	-23.2	-32.9	25	MeOH	406
	K ⁺	3.49(1)	ISE	-30.0(Cal)	-33.9	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	2.43(2)	ISE	-5.0(Cal)	29.5	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	3.4	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	690
	K ⁺	3.22	Pot			25	PC	865
	Rb ⁺	3.9	Cal	-9.5	42.6	25	MeCN	408
	Rb ⁺	2.50	Cal	-8.0	20.8	25	MeOH	406
	Rb ⁺	2.69	Cal	-16.3	-3.4	25	PC	293
	Cs ⁺	nm	Cal			25	MeCN	408
	Cs ⁺	2.50	Cal	-6.5	25.8	25	MeOH	406
	Cs ⁺	2.58	Cal	-4.7	33.6	25	PC	293
	Mg ²⁺	4.75	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 10.2-11.7	146
	Ca ²⁺	2.7	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	3.09	Pot			25	DMF	867
	Ca ²⁺	3.5	Pot			25	MeCN-H ₂ O (X _{MeCN} = 0.1) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	4.4	Pot			25	MeCN-H ₂ O (X _{MeCN} = 0.2) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	4.8	Pot			25	MeCN-H ₂ O (X _{MeCN} = 0.3) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	5.0	Pot			25	MeCN-H ₂ O (X _{MeCN} = 0.4) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	5.5	Pot			25	MeCN-H ₂ O (X _{MeCN} = 0.5) 0.1 M Et ₄ NClO ₄	866

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ca ²⁺	6.3	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.6$)	
	Ca ²⁺	6.7	Pot			25	0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	7.7	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.7$)	
	Ca ²⁺	8.5	Pot			25	0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	2.53(1)	Cal			25	MeCN·H ₂ O ($X_{MeCN} = 0.9$)	866
	Ca ²⁺	2.92(2)	Pot	-2.4(1+2)(Cal)	96(1+2)	25	MeCN, 0.1 M Et ₄ NClO ₄	412
	Ca ²⁺	5.47	Pot			25	MeOH	412
	Ca ²⁺	<2	Spec			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ca ²⁺	<2	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 9.1-11.2	146
	Ca ²⁺	8.65	Pot			25	Me ₂ SO	868
	Sr ²⁺	2.50	Cal	-0.2	47	25	Me ₂ SO	867
	Sr ²⁺	2.56	Cal			25	PC	867
	Sr ²⁺	2.59	Pot			25	MeOH	412
	Sr ²⁺	4.87	Pot			25	MeOH (competitive Cal)	412
	Sr ²⁺	<2	Spec			25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ba ²⁺	6.32	Pot	-32.4(Cal)	11.7	25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 9.4-11.5	146
	Ba ²⁺	2.53	Cal	-5.5	30	25	Me ₂ SO	868
	Ba ²⁺	2.53	Cal	-5.5	29.9	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ba ²⁺	5.34	Pot			25	MeOH	412
	Ba ²⁺	10.4(1+2)	Pot	-38.2(Cal)	70	25	MeOH (anion = ClO ₄ ⁻)	414
	Ba ²⁺	<2	Spec			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 11.1-11.9	146
	La ³⁺	15.1	Pot			25	MeOH, 0.05 M Et ₄ NClO ₄	412
	Pr ³⁺	3.86	Spec			25	Me ₂ SO	868
	Pr ³⁺	15.51	Pot	-28.9	201	25	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.4	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.3	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.1	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Nd ³⁺	3.97	Spec			25	Me ₂ SO	868
	Sm ³⁺	4.06	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Sm ³⁺	9.8	Pot	-50	13	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Sm ³⁺	15.3	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Eu ³⁺	4.69	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Eu ³⁺	9.1	Pot	-25	88	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ³⁺	15.2	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Gd ³⁺	3.87	Spec			25	Me ₂ SO	868
	Gd ³⁺	15.4	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Dy ³⁺	15.4	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Ho ³⁺	3.80	Spec			25	Me ₂ SO	868
	Er ³⁺	15.5	Pot	-37.7	163	25	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	15.4	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	15.1	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	14.9	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Yb ³⁺	4.52	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Yb ³⁺	9.5	Pot	-12	142	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Yb ³⁺	4.43	Spec			25	Me ₂ SO	868
	Yb ³⁺	15.6	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Mn ²⁺	1.6	Spec			25?	H ₂ O	116
	Co ²⁺	6.38	Pot			25	MeOH (anion = NO ₃ ⁻)	415
	Ni ²⁺	9.3	Pot	11.6(Cal)	216	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Cu ²⁺	9.51	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Cu ²⁺	4.45 (Cu ₂ L)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Cu ²⁺	16.97 (CuHL)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Ag ⁺	8.51	Pot	-42.0	11.4	25	(Cu ²⁺ + H ⁺ + L)	405
	Ag ⁺		Cal	-47.2		25	H ₂ O, 0.1 M Et ₄ NClO ₄	869
	Ag ⁺		Pot	-39.1		25	H ₂ O	869
	Ag ⁺	7.40	Pot	-27.8	48.3	25	MeCN·H ₂ O ($X_{MeCN} = 0.02$)	869
	Ag ⁺	7.03	Pot	-20.4	71.8	25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺		Cal	-16.9		25	MeCN·H ₂ O ($X_{MeCN} = 0.05$)	869
	Ag ⁺	7.09	Pot	-20.4	70.1	25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺		Cal	-18.8		25	MeCN·H ₂ O ($X_{MeCN} = 0.1$)	869
	Ag ⁺	7.08	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.1$)	869
	Ag ⁺	interpolated	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.2$)	869
	Ag ⁺	7.06	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.3$)	869
	Ag ⁺	7.03	Pot	-31.5	44.6	25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺		Cal	-22.1		25	MeCN·H ₂ O ($X_{MeCN} = 0.313$)	869
	Ag ⁺	7.08	Pot			25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺	7.17	Pot	-40.0	3.02	25	MeCN·H ₂ O ($X_{MeCN} = 0.4$)	869
	Ag ⁺	7.22	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.4$)	869
	Ag ⁺	7.33	Pot	-43.8	-6.71	25	MeCN·H ₂ O ($X_{MeCN} = 0.5$)	869
						25	0.1 M Et ₄ NClO ₄	869
						25	MeCN·H ₂ O ($X_{MeCN} = 0.6$)	869
						25	0.1 M Et ₄ NClO ₄	869
						25	MeCN·H ₂ O ($X_{MeCN} = 0.7$)	869
						25	0.1 M Et ₄ NClO ₄	869
						25	MeCN·H ₂ O ($X_{MeCN} = 0.8$)	869
						25	0.1 M Et ₄ NClO ₄	869

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Ag ⁺	7.40	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.84$)	
	Ag ⁺	interpolated					0.1 M Et ₄ NClO ₄	869
	Ag ⁺	7.58	Pot			25	MeCN·H ₂ O ($X_{MeCN} = 0.9$)	
	Ag ⁺	7.65	Pot			25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺	interpolated					MeCN·H ₂ O ($X_{MeCN} = 0.95$)	
	Ag ⁺	7.75	Pot	-48.8	-15.4	25	0.1 M Et ₄ NClO ₄	869
	Ag ⁺	7.74	ISE	-47.5(Cal)	-11.7	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ag ⁺	7.6	Pot	-36	25	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Ag ⁺	10.46	Pot	-54.6(Cal)	16.8	25	MeOH, 0.05 M Et ₄ NClO ₄	418
	Ag ⁺	6.17	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	870
	Ag ⁺	15.0	Pot	-13.0	243	25	PC, 0.1 M Et ₄ NClO ₄	326,871(logK)
	Ag ⁺	14.9	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	14.8	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Zn ²⁺	<5	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Hg ²⁺	21.0	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	872
	Tl ⁺	3.19	Pot			25	H ₂ O, $I < 0.1$ (Et ₄ NClO ₄)	873
	Tl ⁺	5.12	Pot			25	EtOH, $I < 0.1$ (Et ₄ NClO ₄)	873
	Tl ⁺	7.0	Pot			25	MeCN	874
	Tl ⁺	5.65	Pot			25	MeOH, $I < 0.1$ (Et ₄ NClO ₄)	873
	Pb ²⁺	9.03	ISE	-24.6(Cal)	89	25	MeOH, 0.05 M Et ₄ NClO ₄	332,419(logK)
	Pb ²⁺	8.18	Pot	-24.6(Cal)	73.2	25	MeOH, 0.05 M Et ₄ NClO ₄	332,420(logK)
	Pb ²⁺	3.40	Spec			-10	MeOH	875
	Pb ²⁺	3.34	Spec			.5	MeOH	875
	Pb ²⁺	3.30	Spec			0	MeOH	875
	Pb ²⁺	3.30	Spec			7	MeOH	875
	Pb ²⁺	3.18	Spec			16.8	MeOH	875
	Pb ²⁺	3.15	Spec			25	MeOH	875
		extrapolated						875
[2.1.1]-2	H ⁺	9.84(1)	Pot			25	95% MeOH	877
	H ⁺	8.17(2)	Pot			25	95% MeOH	877
	Li ⁺	4.21	Pot			25	95% MeOH	877
	Na ⁺	5.20	Pot			25	95% MeOH	877
	K ⁺	2.60	Pot			25	95% MeOH	877
	Rb ⁺	<2	Pot			25	95% MeOH	877
	Cs ⁺	<2	Pot			25	95% MeOH	877
	Mg ²⁺	<2	Pot			25	95% MeOH	877
	Ca ²⁺	4.01	Pot			25	95% MeOH	877
	Sr ²⁺	3.57	Pot			25	95% MeOH	877
	Ba ²⁺	3.34	Pot			25	95% MeOH	877
[2.1.1]-3	H ⁺	9.41(1)	Pot			25	95% MeOH	877
	H ⁺	5.82(2)	Pot			25	95% MeOH	877
	Li ⁺	<2	Pot			25	95% MeOH	877
	Na ⁺	3.15	Pot			25	95% MeOH	877
	K ⁺	<2	Pot			25	95% MeOH	877
	Rb ⁺	<2	Pot			25	95% MeOH	877
	Cs ⁺	<2	Pot			25	95% MeOH	877
	Mg ²⁺	<2	Pot			25	95% MeOH	877
	Ca ²⁺	4.55	Pot			25	95% MeOH	877
	Sr ²⁺	4.61	Pot			25	95% MeOH	877
	Ba ²⁺	<2	Pot			25	95% MeOH	877
K ₂ [2.1.1]-1	Na ⁺	nm	Cal			25	MeCN	408
	Na ⁺	nm	Cal			25	MeOH	408
	K ⁺	nm	Cal			25	MeCN	408
	K ⁺	nm	Cal			25	MeOH	408
	Rb ⁺	nm	Cal			25	MeCN	408
	Rb ⁺	nm	Cal			25	MeOH	408
	Cs ⁺	nm	Cal			25	MeCN	408
	Cs ⁺	nm	Cal			25	MeOH	408
	Ca ²⁺	nm	Cal			25	MeOH	408
	Sr ²⁺	nm	Cal			25	MeOH	408
	Ba ²⁺	nm	Cal			25	MeCN	408
	Ba ²⁺	nm	Cal			25	MeOH	408
	Ag ⁺	nm	Cal			25	MeCN	408
	Ag ⁺	nm	Cal			25	MeOH	408
	Pb ²⁺	nm	Cal			25	MeOH	408
[1.1.Spher]-1	Li ⁺	13.79	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Na ⁺	15.11	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	K ⁺	11.00	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	9.75	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Cs ⁺	7.63	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
[1.1.Spher]-2	Li ⁺	7.85 (LiL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v:v), buffered (Li ⁺ + HL = LiL + H ⁺)	756
	Na	6.95 (NaL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v:v), buffered (Na ⁺ + HL = NaL + H ⁺)	756
	K ⁺	7.85 (KL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v:v), buffered (K ⁺ + HL = KL + H ⁺)	756
[2.1.Spher]-1	Li ⁺	9.79	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	15.41	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	K ⁺	>14.57	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	14.96	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Cs ⁺	12.01	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	NH ₄ ⁺	13.62	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
[2.2.Spher]-1	Li ⁺	7.26	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Na ⁺	9.90	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	K ⁺	13.93	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	14.89	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Cs ⁺	15.91	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
[2.2.Spher]-2	Na ⁺	7.75 (NaL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v/v), buffered (Na ⁺ + HL = NaL + H ⁺)	756
	Na ⁺	7.75 (NaL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v/v), buffered, 100 equiv of NaBr present (NaL + Na ⁺ = Na*L + Na ⁺)	756
	K ⁺	7.05 (KL)	Spec			25	EtO(CH ₂ CH ₂ O) ₂ H·H ₂ O (1:99/v/v), buffered, 100 equiv of KBr present (NaL + K ⁺ = KL + Na ⁺)	756
[2.2.1]-1	H ⁺	11.53(1)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	H ⁺	9.48(2)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Li ⁺	7.33	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Li ⁺	2.51	NMR			40	1 mol% LiCl in 45 mol% AlCl ₃ melt	40
	Li ⁺	4.69	Cal	-10.3	54.7	25	MeOH	406
	Li ⁺	2.63	Pot			25	Me ₂ SO	865
	Li ⁺	9.67	Pot			25	PC	865
	Li ⁺	11.5	Pot	-50.8(Cal)	48.7	25	PC, 0.05 M Et ₄ NClO ₄	293
	Na ⁺	12.98	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Na ⁺	av 13.00	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate), L competes with Bridged Spher-8	494
	Na ⁺	11.95	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494
	Na ⁺		Cal	-35.6	32.3	25	DMF	878
	Na ⁺	7.86	Pot			25	DMF	865
	Na ⁺		Cal	-43.5	68.8	25	MeCN	878
	Na ⁺	10.97	ISE	-65.5(Cal)	-10.7	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Na ⁺		Cal	-48.1		25	Me ₂ CO	878
	Na ⁺		Cal	-39.2	51.9	25	MeOH	878
	Na ⁺	9.71	Pot	-49.8(Cal)	18.1	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Na ⁺	7.18	Pot			25	Me ₂ SO	865
	Na ⁺		Cal	-69.9		25	NMe	878
	Na ⁺	11.6	Pot			25	PC	865
	Na ⁺	11.86	Pot	-68.1(Cal)	-2.3	25	PC, 0.05 M Et ₄ NClO ₄	293
	K ⁺	11.22	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	K ⁺		Cal	-39.7	-7.02	25	DMF	878
	K ⁺	6.59	Pot			25	DMF	865
	K ⁺	6.1	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	K ⁺		Cal	-47.7	21.1	25	MeCN	878
	K ⁺		Cal	-52.7		25	Me ₂ CO	878
	K ⁺	9.10	ISE	-64.1(Cal)	-41.6	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	K ⁺		Cal	-51.0	-8.42	25	MeOH	878
	K ⁺	8.40	ISE	-61.1(Cal)	-45.0	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	K ⁺	6.00	Pot			25	Me ₂ SO	865
	K ⁺		Cal	-51.0		25	NMe	878
	K ⁺	9.15	ISE	-66.0(Cal)	-47.0	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	8.69	Pot			25	PC	865
	Rb ⁺	9.31	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	6.74	Pot	-56.3(Cal)	-60.4	25	MeCN	408
	Rb ⁺	7.35	Pot	-55.7(Cal)	-46.6	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Rb ⁺	7.26	Pot	-54.7(Cal)	-45.0	25	PC, 0.05 M Et ₄ NClO ₄	293
	Cs ⁺	4.68	Cal	-45.8	-64.4	25	MeCN	408
	Cs ⁺	4.32	Cal	-47.4	-76.8	25	MeOH	406
	Cs ⁺	4.43	Cal	-48.2	-77.2	25	PC	293
	Mg ²⁺	4.17	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 9.7-11.4	146
	Ca ²⁺	6.58	Pot			25	DMF	867
	Ca ²⁺	9.29	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 7.5-8.0	146
	Ca ²⁺	>5(1+2)	Pot	-32.5(Cal)	80	25	MeOH, 0.05 M Et ₄ NNO ₃	412

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ca ²⁺	3.90	Pot			25	Me ₂ SO	867
	Ca ²⁺	3.29	Spec			25	Me ₂ SO	868
	Ca ²⁺	11.48	Pot			25	PC	867
	Sr ²⁺	7.95	Pot			25	DMF	867
	Sr ²⁺	10.60	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 6.7-7.7	146
	Sr ²⁺	>5(1+2)	Pot	-43.0(Cal)	66	25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Sr ²⁺	6.10	Pot			25	Me ₂ SO	867
	Sr ²⁺	5.41	Spec			25	Me ₂ SO	868
	Sr ²⁺	5.11	Spec			25	Me ₂ SO, 0.02 M Me ₄ NCl	868
	Ba ²⁺	6.60	Pot			25	DMF	865
	Ba ²⁺	6.96	Pot			25	DMF	867
	Ba ²⁺	>11	Pot	-78.3(Cal)		25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ba ²⁺	10.07	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 6.5-7.4	146
	Ba ²⁺	10.4	Pot	-38.2(Cal)	70.1	25	MeOH, 0.05 M Et ₄ NClO ₄	414
	Ba ²⁺	10.43	Pot			25	MeOH	865
	Ba ²⁺	5.44	Pot			25	Me ₂ SO	865
	Ba ²⁺	5.30	Pot			25	Me ₂ SO	867
	Ba ²⁺	2.99	Spec			25	Me ₂ SO	868
	Ba ²⁺	13.54	Pot			25	PC	865
	La ³⁺	11.39	Pot	-77.91(Cal)	-43.1	25	MeCN	879
	La ³⁺	8.28	Calc'd			25?	MeOH	111
	La ³⁺	18.56	Pot	-76.78(Cal)	97.9	25	PC	879
	Pr ³⁺	11.52	Pot	-93.30(Cal)	-92.5	25	MeCN	879
	Pr ³⁺	3.47	Spec			25	Me ₂ SO	868
	Pr ³⁺	18.70	Pot	-91.25(Cal)	51.9	25	PC	879
	Pr ³⁺		Pot	-138	-100	25	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	18.6	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	17.9	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	17.1	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Nd ³⁺	11.65	Pot	-106.9(Cal)	-135.6	25	MeCN	879
	Nd ³⁺	3.01	Spec			25	Me ₂ SO	868
	Nd ³⁺	18.73	Pot	-104.6(Cal)	7.9	25	PC	879
	Sm ²⁺	10.0	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Sm ³⁺	2.9	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Sm ³⁺	11.6	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ²⁺	10.6	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Eu ²⁺	9.3	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ³⁺	3.2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Eu ³⁺	11.3	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Gd ³⁺	10.14	Calc'd			25?	MeOH	111
	Gd ³⁺	3.26	Spec			25	Me ₂ SO	868
	Tb ³⁺	3.3	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Ho ³⁺	3.11	Spec			25	Me ₂ SO	868
	Er ³⁺		Pot	-146	-117	25	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	18.9	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	18.1	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	17.3	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Yb ³⁺	11.6	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Yb ²⁺	11.2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686
	Yb ³⁺	4.00	Spec			25	Me ₂ SO	868
	Lu ³⁺	12.7	Calc'd			25?	MeOH	111
	Co ²⁺	13.40	Pot			25	MeOH (anion = NO ₃)	415
	Ni ²⁺	9.6	Pot	11.2(Cal)	220	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Cu ²⁺	10.08	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Cu ²⁺	4.30 (Cu ₂ L)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Ag ⁺	11.90	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.55	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.1), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.31	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.2), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.28	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.3), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.24	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.4), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.30	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.5), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.35	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.6), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.53	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.7), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.70	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.8), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	10.96	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.9), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	11.06	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.95), 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	11.29	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	417
	Ag ⁺	11.29	I SE	-62.7(Cal)	4.7	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ag ⁺	11.1	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Ag ⁺	14.44	Pot	-81.9	0	25	MeOH, 0.05 M Et ₄ NClO ₄	418
	Ag ⁺	9.55	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	870
	Ag ⁺		Pot	-130	-83.7	25	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	18.5	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Ag ⁺	17.0	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Zn ²⁺	7.58	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405	
	Zn ²⁺	15.69 (ZnHL)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄ , (Zn ²⁺ + H ⁺ + L)	405	
	Hg ²⁺	23.0	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	872	
	Tl ⁺	8.61	Pot			25	DMF	865	
	Tl ⁺	11.01	Pot			25	EtOH, $I < 0.1$ (Et ₄ NClO ₄)	873	
	Tl	11.9	Spec			25	MeCN	874	
	Tl ⁺	10.76	Pot			25	MeOH, $I < 0.1$ (Et ₄ NClO ₄)	873	
	Tl ⁺	6.80	Pot			25	Me ₂ SO	865	
	Tl ⁺	12.13	Pot			25	PC	865	
	Pb ²⁺	12.76	Solv Extr. Fluor			25	DCE	880	
	Pb ²⁺	12.84	ISE	-67.9(Cal)	17	25	MeOH, 0.05 M Et ₄ NClO ₄	332,419(logK)	
	Pb ²⁺	15.11	Pot	-67.9(Cal)	60.1	25	MeOH, 0.05 M Et ₄ NClO ₄	332,420(logK)	
[2.2.1]-2	Ag ⁺	14.42	Pot	-81.9(Cal)	0	25	MeOH, 0.05 M Et ₄ NClO ₄	327	
	Pb ²⁺	13.11	ISE	-65.3(Cal)	31	25	MeOH, 0.05 M Et ₄ NClO ₄	419	
CHART LXXI									
[2.2.1]-3	H ⁺	9.50(1)	Pot			25	95% MeOH	877	
	H ⁺	8.19(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	4.83	Pot			25	95% MeOH	877	
	K ⁺	4.14	Pot			25	95% MeOH	877	
	Rb ⁺	3.12	Pot			25	95% MeOH	877	
	Cs ⁺	<2	Pot			25	95% MeOH	877	
	Mg ²⁺	<2	Pot			25	95% MeOH	877	
	Ca ²⁺	4.36	Pot			25	95% MeOH	877	
	Sr ²⁺	4.33	Pot			25	95% MeOH	877	
	Ba ²⁺	4.92	Pot			25	95% MeOH	877	
[2.2.1]-4	H ⁺	9.94(1)	Pot			25	95% MeOH	877	
	H ⁺	8.25(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	6.13	Pot			25	95% MeOH	877	
	K ⁺	5.11	Pot			25	95% MeOH	877	
	Rb ⁺	3.41	Pot			25	95% MeOH	877	
	Cs ⁺	2.32	Pot			25	95% MeOH	877	
	Mg ²⁺	<2	Pot			25	95% MeOH	877	
	Ca ²⁺	5.20	Pot			25	95% MeOH	877	
	Sr ²⁺	5.81	Pot			25	95% MeOH	877	
	Ba ²⁺	5.05	Pot			25	95% MeOH	877	
[2.2.1]-5	H ⁺	9.11(1)	Pot			25	95% MeOH	877	
	H ⁺	6.82(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	3.07	Pot			25	95% MeOH	877	
	K ⁺	2.44	Pot			25	95% MeOH	877	
	Rb ⁺	<2	Pot			25	95% MeOH	877	
	Cs ⁺	<2	Pot			25	95% MeOH	877	
	Mg ²⁺	4.32	Pot			25	95% MeOH	877	
	Ca ²⁺	5.63	Pot			25	95% MeOH	877	
	Sr ²⁺	5.72	Pot			25	95% MeOH	877	
	Ba ²⁺	5.51	Pot			25	95% MeOH	877	
[2.2.1]-6	H ⁺	9.77(1)	Pot			25	95% MeOH	877	
	H ⁺	5.91(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	4.01	Pot			25	95% MeOH	877	
	K ⁺	3.40	Pot			25	95% MeOH	877	
	Rb ⁺	<2	Pot			25	95% MeOH	877	
	Cs ⁺	<2	Pot			25	95% MeOH	877	
	Mg ²⁺	<2	Pot			25	95% MeOH	877	
	Ca ²⁺	5.92	Pot			25	95% MeOH	877	
	Sr ²⁺	5.95	Pot			25	95% MeOH	877	
	Ba ²⁺	3.63	Pot			25	95% MeOH	877	
K ₂ [2.2.1]-1 (Chart LXX)	Na ⁺	4.24	Cal	-3.3	69.8	25	MeCN	408	
	Na ⁺	nm	Cal			25	MeOH	408	
	K ⁺	nm	Cal			25	MeCN	408	
	K ⁺	nm	Cal			25	MeOH	408	
	Rb ⁺	nm	Cal			25	MeCN	408	
	Rb ⁺	nm	Cal			25	MeOH	408	
	Cs ⁺	nm	Cal			25	MeCN	408	
	Cs ⁺	nm	Cal			25	MeOH	408	
	Ca ²⁺	3.49	Cal	-6.0	46.3	25	MeOH	408	
	Sr ²⁺	2.98	Cal	-2.4	48.7	25	MeOH	408	
	Ba ²⁺	>5	Cal	-36.7		25	MeCN	408	
	Ba ²⁺	nm	Cal	>0		25	MeOH	408	
	Ag ⁺	nm	Cal			25	MeCN	408	
	Ag ⁺	nm	Cal			25	MeOH	408	
	Pb ²⁺	3.57	Cal	-52	50.7	25	MeOH	408	
Py[2.2.1]-1	H ⁺	10.15(1)	Pot			25?	H ₂ O	881	
	H ⁺	8.13(2)	Pot			25?	H ₂ O	881	
	Li ⁺	3.28	Pot			25?	H ₂ O	881	
	Na ⁺	5.28	Pot			25?	H ₂ O	881	
	K ⁺	3.44	Pot			25?	H ₂ O	881	
	Rb ⁺	2.60	Pot			25?	H ₂ O	881	
	Cs ⁺	<2.00	Pot			25?	H ₂ O	881	
	Mg ²⁺	<2.00	Pot			25?	H ₂ O	881	
	Ca ²⁺	7.82	Pot			25?	H ₂ O	881	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
A[2.2.1]-1 (Chart LXX)	Sr ⁺	8.60	Pot			25?	H ₂ O	881
	Ba ²⁺	7.90	Pot			25?	H ₂ O	881
	H ⁺	11.11(1)	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	H ⁺	6.21(2)	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	H ⁺	2.2(3)	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Na ⁺	2.8	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	K ⁺	2.0	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Ca ²⁺	5.5	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Sr ²⁺	5.4	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Ba ²⁺	5.0	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Cu ²⁺	10.4	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
	Cd ²⁺	8.1	Pot			25?	H ₂ O, 0.1 M Me ₄ NBr	703
[2.2.C ₆]-1	Hg ²⁺	18.0	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	872
[2.2.2]-1	H ⁺	(1)	Cal	.48	23.5	25	H ₂ O	882
	H ⁺	(2)	Cal	.18	77.2	25	H ₂ O	882
	H ⁺	9.6(1)	Pot	.47.3(Cal)		25	H ₂ O, 0.1 M Me ₄ NCl	883
	H ⁺	7.3(2)	Pot	.18.4(Cal)		25	H ₂ O, 0.1 M Me ₄ NCl	883
	H ⁺	9.97(1)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	884
	H ⁺	7.17(2)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	884
	H ⁺	9.66(1)	Pot			25	H ₂ O, 0.05 M Me ₄ NBr	884
	H ⁺	7.27(2)	Pot			25	H ₂ O, 0.05 M Me ₄ NBr	884
	H ⁺	9.71(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	884
	H ⁺	7.26(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	884
	H ⁺	18.6	Pot			25?	MeCN, 0.005 M Et ₄ NClO ₄	885
	H ⁺	10.72(1)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	H ⁺	9.03(2)	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Li ⁺	0.30	Cond	~-4(Cal)		25	H ₂ O, 0.1 M Me ₄ NBr	886
	Li ⁺	0.99	NMR			30	H ₂ O	887
	Li ⁺	2	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	886
	Li ⁺	9.14	Pot	.47.0(Cal)	17.2	25	BnzCN	889, 890
	Li ⁺	7.9	Volt?			25?	CH ₂ Cl ₂ , 0.1 M Et ₄ NClO ₄	891
	Li ⁺	2.57	Pot			25	EtOH	892
	Li ⁺	2.06	NMR			40	1 mol% LiCl in 45 mol% AlCl ₃ melt	40
	Li ⁺		Cal	.29.8	33.8	25	MeCN	893
	Li ⁺	6.7	Pot			25?	MeCN, 0.5 M Me ₄ NClO ₄	888
	Li ⁺	2.46	Cal	.3.7	34.6	25	MeOH	406
	Li ⁺	4.3	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	888
	Li ⁺	2.65	ISE			25?	MeOH	10
	Li ⁺	<2.0	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	888
	Li ⁺	11.49	Pot	.59.1(Cal)	21.8	25	NMe	894, 895
	Li ⁺		Cal	.36.4	10.7	25	PC	893
	Li ⁺	6.77	Pot	.35.9(Cal)	8.7	25	PC, 0.05 M Et ₄ NClO ₄	293
	Li ⁺	2.49	Pot			25	n-PrOH	892
	Li ⁺	2.94	NMR			30	Py	887
	Na ⁺	10.56	NMR			25	D ₂ O, sat'd CDCl ₃ (anion = picrate)	504
	Na ⁺	3.9	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	888
Na ⁺	11.56	Pot	.66.1(Cal)	-2.93	25	BnzCN	889, 890	
Na ⁺	10.6	Volt?			25?	CH ₂ Cl ₂ , 0.1 M Et ₄ NClO ₄	891	
Na ⁺	4.81	Cal	.32.6	-17.1	25	Diox·H ₂ O (20:80/w:w)	205, 525	
Na ⁺	5.51	Cal	.33.8	-7.7	25	Diox·H ₂ O (35:65/w:w)	205, 525	
Na ⁺	6.41	Cal	.35.0	0.3	25	Diox·H ₂ O (50:50/w:w)	205, 525	
Na ⁺	6.93	Cal	.36.6	9.7	25	Diox·H ₂ O (70:30/w:w)	205, 525	
Na ⁺	4.63	Cal	.23.1	-6.0	25	Diox·H ₂ O (50:50/w:w), L competes with 18C6-1	205, 525	
Na ⁺	4.77	Cal	.19.4	-26.2	25	Diox·H ₂ O (70:30/w:w), L competes with 18C6-1	205, 525	
Na ⁺	5.7	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	686	
Na ⁺	9.8	NMR			22	MeCN	532	
Na ⁺		Cal	.61.0	-20.1	25	MeCN	893	
Na ⁺	10.68	ISE	.61.9(Cal)	-4.0	25	MeCN, 0.05 M Et ₄ NClO ₄	408	
Na ⁺	10.9	Pot			25?	MeCN, 0.5 M Me ₄ NClO ₄	888	
Na ⁺	7.95	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄	406	
Na ⁺	>8	ISE			25?	MeOH	10	
Na ⁺	7.8	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	886	
Na ⁺	7.97	Pot	.39.8(Cal)	18.5	25	MeOH, 0.05 M Et ₄ NClO ₄	406	
Na ⁺	5.12	Pot			25	Me ₂ SO	865	
Na ⁺	5.4	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	888	
Na ⁺	5.6	Pot			25?	Me ₄ U, 0.5 M Me ₄ NClO ₄	888	
Na ⁺	13.56	Pot	.85.7(Cal)	-28.0	25	NMe	894, 895	
Na ⁺		Cal	.64.1	-13.1	25	PC	893	
Na ⁺		Kin	.0.8		25	PC (anion = ClO ₄), [step 3: Na ⁺ L = (NaL) ⁺] ^e	896	
Na ⁺	10.29	Pot	.67.5(Cal)	-30.2	25	PC, 0.05 M Et ₄ NClO ₄	293	
Na ⁺	8.39	Pot			25	PrOH	892	
Na ⁺	6.69	Spec			30	THF (anion = picrate)	451	
K ⁺	13.20	NMR			25	D ₂ O, sat'd CDCl ₃ (anion = picrate)	504	
K ⁺	5.77	Pot			20	H ₂ O, 0.1 M Me ₄ NBr	422	
K ⁺		Cal	.47.9		25	H ₂ O, 0.01 M Et ₄ NOH	897	
K ⁺	5.4	Cond			25	H ₂ O (anion = NO ₃ ⁻)	688	
K ⁺	9.71	Solv Extr-UV			25?	Acetophenone (anion = 4·NO ₂ PhO ⁻)	551	
K ⁺	8.86	Solv Extr-UV			25?	Adiponitrile (anion = 4·NO ₂ PhO ⁻)	551	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	K ⁺	6.68	Solv Extr-UV			25?	<i>t</i> -Amyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	7.93	Solv Extr-UV			25?	Benzyl Alcohol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	13.06	Pot	-79.5(Cal)	-16.7	25	BnzCN	889, 890
	K ⁺	13.0	Volt?			25?	CH ₂ Cl ₂ , 0.1 M Et ₄ NClO ₄	891
	K ⁺	7.29	Solv Extr-UV			25?	Cyclohexanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	8.12	Solv Extr-UV			25?	Cyclohexanone (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	8.70	Solv Extr-UV			25?	1,4-Dioxaspiro[4,5]decane (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	6.71	Cal	-49.9	-38.9	25	Diox·H ₂ O (20:80/w:w)	205, 525
	K ⁺	7.58	Cal	-51.0	-25.8	25	Diox·H ₂ O (35:65/w:w)	205, 525
	K ⁺	8.40	Cal	-53.2	-17.4	25	Diox·H ₂ O (50:50/w:w)	205, 525
	K ⁺	9.34	Cal	-54.7	-4.7	25	Diox·H ₂ O (70:30/w:w)	205, 525
	K ⁺	1.90	Cal	-17.3	-21.8	25	Diox·H ₂ O (20:80/w:w), K ⁺ competes with Na ⁺	205, 525
	K ⁺	2.07	Cal	-17.2	-18.1	25	Diox·H ₂ O (35:65/w:w), K ⁺ competes with Na ⁺	205, 525
	K ⁺	1.99	Cal	-18.2	-17.8	25	Diox·H ₂ O (50:50/w:w), K ⁺ competes with Na ⁺	205, 525
	K ⁺	2.41	Cal	-18.1	-14.4	25	Diox·H ₂ O (70:30/w:w), K ⁺ competes with Na ⁺	205, 525
	K ⁺	8.03	Pot			25	DMF	865
	K ⁺	9.29	Solv Extr-UV			25?	Isobutyronitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺		Cal	-71.3	-28.3	25	MeCN	893
	K ⁺	9.56	ISE	-74.0(Cal)	-66.1	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	K ⁺	11.4	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	K ⁺	9.82	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄	406
	K ⁺	>8	ISE			25?	MeOH	10
	K ⁺	10.49	Pot	-75.0(Cal)	-51.7	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	K ⁺	7.18	Pot			25	Me ₂ SO	865
	K ⁺	12.58	Pot	-80.3(Cal)	-28.5	25	NMe	894, 895
	K ⁺		Cal	-71.9	-27.8	25	PC	893
	K ⁺		Kin	-12.1		25	PC (anion = ClO ₄), [step 3: K ⁺ L = (KL) ⁺] ^e	896
	K ⁺	11.00	ISE	-72.8(Cal)	-34.6	25	PC, 0.05 M Et ₄ NClO ₄	107
	K ⁺	8.38	Solv Extr-UV			25?	Phenylacetoneitrile (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	8.89	Solv Extr-UV			25?	2-Phenylethanol (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	10.80	Pot			25	PrOH	892
	K ⁺	7.12	Solv Extr-UV			25?	2-(tetrahydrofurfuryloxy) tetrahydropyran (anion = 4-NO ₂ PhO ⁻)	551
	K ⁺	8.38	Spec			30	THF (anion = picrate)	451
	Rb ⁺	12.32	NMR			25	D ₂ O, sat'd CDCl ₃ (anion = picrate)	504
	Rb ⁺	11.00	Pot	-74.2(Cal)	-38.5	25	BnzCN	889, 890
	Rb ⁺	12.5	Volt?			25?	CH ₂ Cl ₂ , 0.1 M Et ₄ NClO ₄	891
	Rb ⁺		Cal	-70.2	-53.6	25	MeCN	893
	Rb ⁺	9.65	Pot	-71.6(Cal)	-56.4	25	MeCN	408
	Rb ⁺	6.4	ISE			25?	MeOH	10
	Rb ⁺	9.10	Pot	-72.7(Cal)	-70.5	25	MeOH, 0.05 M Et ₄ NClO ₄	406
	Rb ⁺	10.30	Pot	-75.1(Cal)	-54.8	25	NMe	894, 895
	Rb ⁺		Cal	-38.2	-56.0	25	PC	893
	Rb ⁺		Kin	-16.3		25	PC (anion = ClO ₄), [step 3: Rb ⁺ L = (RbL) ⁺] ^e	896
	Rb ⁺	9.10	Pot	-70.6(Cal)	-63.4	25	PC, 0.05 M Et ₄ NClO ₄	293
	Rb ⁺	9.10	Pot			25	PrOH	892
	Cs ⁺	7.55	NMR			25	D ₂ O, sat'd CDCl ₃ (anion = picrate)	504
	Cs ⁺	-0.22	Cal	~25		25	H ₂ O, 0.1-1.0 M Me ₄ NBr	868
	Cs ⁺	-0.15	Cond			25	H ₂ O, 0.1 M Me ₄ NBr	868
	Cs ⁺	-0.22	volume measurements			25	H ₂ O, 0.2-1.0 M Me ₄ NBr	868
	Cs ⁺	6.59	Pot	-49.7(Cal)	-40.6	25	BnzCN	889, 890
	Cs ⁺	8.5	Volt?			25?	CH ₂ Cl ₂ , 0.1M Et ₄ NClO ₄	891
	Cs ⁺	2.00	NMR			32	DMF	898
	Cs ⁺	3.27	NMR			32	84.4 mol% MeCN·Me ₂ SO	898
	Cs ⁺	2.52	NMR			32	66.9 mol% MeCN·Me ₂ SO	898
	Cs ⁺	2.05	NMR			32	47.4 mol% MeCN·Me ₂ SO	898
	Cs ⁺	1.68	NMR			32	25.2 mol% MeCN·Me ₂ SO	898
	Cs ⁺	4.83	Cal	-44.2	-56.4	25	MeCN	408
	Cs ⁺		Cal	-43.5	-58.8	25	MeCN	893
	Cs ⁺	4.71	NMR			32	MeCN	898
	Cs ⁺	3.28	NMR			32	94.8 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	2.80	NMR			32	84.5 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	2.41	NMR			32	74.3 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	1.80	NMR			32	49.1 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	1.38	NMR			32	24.3 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	1.31	NMR			32	14.6 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	1.25	NMR			32	4.9 mol% Me ₂ CO·Me ₂ SO	898
	Cs ⁺	4.26	NMR	-64.5	-135	24	Me ₂ CO, 0.02 M CsBPh ₄	899
	Cs ⁺	4.26	NMR			29	Me ₂ CO, 0.02 M CsBPh ₄	899
	Cs ⁺	3.58	NMR			46	Me ₂ CO, 0.02 M CsBPh ₄	899
	Cs ⁺	3.28	NMR			54	Me ₂ CO, 0.02 M CsBPh ₄	899

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	Cs ⁺	3.75	NMR			32	Me ₂ CO	898
	Cs ⁺	3.95	Cal	-49.7	-91.6	25	MeOH	406
	Cs ⁺	4.4	ISE			25?	MeOH	10
	Cs ⁺	1.19	NMR			32	Me ₂ SO	898
	Cs ⁺	3.78	NMR			-40	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.05	NMR			-21	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.96	NMR			-15	Me ₂ SO, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	2.84	NMR			-2	Me ₂ SO, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	2.71	NMR			-2	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.17	NMR			24	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.19	NMR			25	Me ₂ SO, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	1.85	NMR			46	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	1.65	NMR			54	Me ₂ SO, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	5.10	Pot	-51.4(Cal)	-74.9	25	NMe	894, 895
	Cs ⁺	3.65	NMR			32	89.2 mol% PC·DMF	898
	Cs ⁺	3.45	NMR			32	78.5 mol% PC·DMF	898
	Cs ⁺	3.19	NMR			32	68.1 mol% PC·DMF	898
	Cs ⁺	2.80	NMR			32	47.7 mol% PC·DMF	898
	Cs ⁺	2.45	NMR			32	28.1 mol% PC·DMF	898
	Cs ⁺	2.29	NMR			32	18.6 mol% PC·DMF	898
	Cs ⁺	2.14	NMR			32	9.2 mol% PC·DMF	898
	Cs ⁺	3.09	NMR			32	77.1 mol% PC·Me ₂ SO	898
	Cs ⁺	2.36	NMR			32	55.8 mol% PC·Me ₂ SO	898
	Cs ⁺	1.94	NMR			32	35.9 mol% PC·Me ₂ SO	898
	Cs ⁺	1.55	NMR			32	17.4 mol% PC·Me ₂ SO	898
	Cs ⁺		Cal	-41.3	-60.0	25	PC	893
	Cs ⁺	4.19	Cal	-42.9	-64.1	25	PC	293
	Cs ⁺	3.90	NMR			32	PC	898
	Cs ⁺	4.00	NMR	-48.1	-86.6	25	PC, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	3.83	NMR			29	PC, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	3.61	NMR			40	PC, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	3.60	NMR			46	PC, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.93	NMR			70	PC, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	3.00	NMR			72	PC, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.56	NMR			96	PC, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	2.42	NMR			100	PC, 0.01 M C ₈ BPh ₄	899
	Cs ⁺	2.23	NMR			105	PC, 0.02 M C ₈ BPh ₄	899
	Cs ⁺	4.55	Pot			25	PrOH	892
	Cs ⁺	6.61	Spec			30	THF (anion = picrate)	451
	Mg ²⁺	<0	Pot			25	H ₂ O, 0.1 M NaNO ₃	691
	Mg ²⁺	4.84	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 9.7-10.4	146
	Ca ²⁺	4.91	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	4.23	Kin	4.60	83.7	25	H ₂ O, pH 11.3	900
	Ca ²⁺	3.79	Pot			25	DMF	867
	Ca ²⁺	5.43	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.05) 0.1 M Et ₄ NClO ₄	868
	Ca ²⁺	5.77	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.1) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	6.11	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.2) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	6.67	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.3) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	7.01	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.4) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	7.30	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.5) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	8.12	Pot			25	MeCN-H ₂ O, (X _{MeCN} = 0.6) 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺	10.5	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	866
	Ca ²⁺		Cal	-13	112	25	MeOH	901
	Ca ²⁺	8.45	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 6.7-8.0	146
	Ca ²⁺	8.16 (1+2)	Pot	-22.0(Cal)	82	25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Ca ²⁺	<2.1	Pot			25	Me ₂ SO	867
	Ca ²⁺	1.91	Spec			25	Me ₂ SO	868
	Ca ²⁺	10.76	Pot			25	PC	867
	Sr ²⁺	4.30	Kin	-23.4	2.93	25	H ₂ O, pH 11.3	900
	Sr ²⁺	8.25	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	884
	Sr ²⁺	8.11	Pot			25	H ₂ O, 0.05 M Me ₄ NBr	884
	Sr ²⁺	7.96	Pot			25	H ₂ O, 0.1 M Me ₄ NBr	884
	Sr ²⁺	7.30	Pot			25	DMF	867
	Sr ²⁺	11.0	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 4.7-9.7	146
	Sr ²⁺	>5(1+2)	Pot	-42.5(Cal)	81	25	MeOH, 0.05 M Et ₄ NNO ₃	412
	Sr ²⁺		Cal	-40	91	25	MeOH	901
	Sr ²⁺	5.26	Pot			25	Me ₂ SO	867
	Sr ²⁺	4.77	Spec			25	Me ₂ SO	868
	Ba ²⁺	~9	Kin			25	H ₂ O, pH 11.3	900
	Ba ²⁺	7.70	Pot			25	DMF	865
	Ba ²⁺	8.39	Pot			25	DMF	867
	Ba ²⁺	>15	NMR			22	MeCN	532
	Ba ²⁺	>9	Pot	-108.8(Cal)		25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ba ²⁺		Cal	-71	9	25	MeOH	901
	Ba ²⁺	~12.9	Pot			25	MeOH	865
	Ba ²⁺	12.89	Pot			25	MeOH, 0.01 M Et ₄ NClO ₄ , pH 5.0-5.9	146

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K-mol	T, °C	conditions ^c	ref
	Ba ²⁺	>12.2						
		(1+2)	Pot	-68.9(Cal)	15	25	MeOH, 0.05 M Et ₄ NClO ₄	412, 414
	Ba ²⁺	6.22	Pot			25	Me ₂ SO	866
	Ba ²⁺	6.50	Pot			25	Me ₂ SO	867
	Ba ²⁺	5.13	Spec			25	Me ₂ SO	868
	Ba ²⁺	17.1	Pot			25	PC	865
	La ³⁺	10.81	Pot	-78.37(Cal)	-55.6	25	MeCN	879
	La ³⁺		Cal	-77.53	48.1	25	PC	879
	La ³⁺	16.1	Pot	-77.4	46.0	25	PC, 0.1 M Et ₄ NClO ₄	326
	La ³⁺	15.4	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	La ³⁺	15.0	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	11.01	Pot	-92.76(Cal)	-100.4	25	MeCN	879
	Pr ³⁺	3.22	Spec			25	Me ₂ SO	868
	Pr ³⁺		Cal	-94.77	-13.4	25	PC	879
	Pr ³⁺	15.9	Pot	-105	-41.8	25	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.6	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	15.0	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Pr ³⁺	14.5	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Nd ³⁺	11.06	Pot	-104.3	-138.5	25	MeCN	879
	Nd ³⁺	12.7						
		(1+2?)	Polg			25	Me ₂ SO, 0.05 M Et ₄ NClO ₄	280
	Nd ³⁺	3.26	Spec			25	Me ₂ SO	868
	Nd ³⁺	15.99	Pot	-104.9	-45.2	25	PC	879
	Sm ²⁺	13.2	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Sm ³⁺	2.7	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Sm ³⁺	11.0	Pot	-105	-138	25	MeCN, 0.1 M Et ₄ NClO ₄	
							(Sm ³⁺ competes with Ag ⁺)	694
	Sm ³⁺	10.9	Pot				MeCN, 0.1 M Et ₄ NClO ₄	
							(Sm ³⁺ competes with K ⁺)	694
	Sm ³⁺	17.3	Pot			25	PC, 0.1 M Et ₄ NClO ₄	
	Eu ²⁺	14.8	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Eu ²⁺	12.9	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Eu ³⁺	2.9	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Eu ³⁺	11.4	Pot	-100	-109	25	MeCN, 0.1 M Et ₄ NClO ₄	
							(Eu ³⁺ competes with Ag ⁺)	694
	Eu ³⁺	10.9	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	
							(Eu ³⁺ competes with K ⁺)	694
	Eu ³⁺	17.2	Pot			25	PC, 0.1 M Et ₄ NClO ₄	
	Gd ³⁺	3.45	Spec			25	Me ₂ SO	868
	Gd ³⁺	16.8	Pot			25	PC, 0.1 M Et ₄ NClO ₄	
	Tb ³⁺	2.9	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Dy ³⁺	17.1	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Ho ³⁺	3.47	Spec			25	Me ₂ SO	868
	Er ³⁺	16.8	Pot	-113.0	-50.2	25	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	16.5	Pot			30	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	15.9	Pot			40	PC, 0.1 M Et ₄ NClO ₄	326
	Er ³⁺	15.3	Pot			50	PC, 0.1 M Et ₄ NClO ₄	326
	Yb ²⁺	14.3	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	868
	Yb ³⁺	10.6	Pot	-100	-134	25	MeCN, 0.1 M Et ₄ NClO ₄	
							(Yb ³⁺ competes with Ag ⁺)	694
	Yb ³⁺	10.8	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	
							(Yb ³⁺ competes with K ⁺)	694
	Yb ³⁺	4.11	Spec			25	Me ₂ SO	868
	Yb ³⁺	3.00	Spec			25	Me ₂ SO, 0.02 M Me ₄ NCl	868
	Yb ³⁺	18.0	Pot			25	PC, 0.1 M Et ₄ NClO ₄	326
	Co ²⁺	2.47	Cal	8.1	74.2	25	MeOH, (anion = NO ₃ ⁻)	415
	Ni ²⁺	<2.0	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	868
	Ni ²⁺	6.9	Pot	13.5(Cal)	177	25	MeOH, 0.05 M Et ₄ NNO ₃	415
	Ni ²⁺	<2.0	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	868
	Ni ²⁺	<2.0	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	868
	Cu ²⁺	6.8	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	868
	Cu ²⁺	17.8	Calc'd			25?	MeCN, 0.5 M Me ₄ NClO ₄	868
	Cu ²⁺	8.59	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Cu ²⁺	4.56	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
		(Cu ₂ L)						
	Cu ²⁺	9.0	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	868
	Cu ²⁺	5.1	Calc'd			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	9.6	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	11.00	Pot	-59.4(Cal)	-8.37	25	BnzCN	889, 890
	Ag ⁺		Cal	-53.5	-5.73	25	MeCN	893
	Ag ⁺	8.94	ISE	-52.3(Cal)	-5.0	25	MeCN, 0.05 M Et ₄ NClO ₄	408
	Ag ⁺	8.7	Pot			25?	MeCN, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	8.9	Pot	.50	0.8	25	MeCN, 0.1 M Et ₄ NClO ₄	694
	Ag ⁺	12.22	Pot	-69.3(Cal)	3.36	25	MeOH, 0.05 M Et ₄ NClO ₄	418
	Ag ⁺	12.3	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	7.2	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	7.27	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	870
	Ag ⁺	9.5	Pot			25?	Me ₄ U, 0.5 M Me ₄ NClO ₄	868
	Ag ⁺	17.71	Pot			25	NMe	895
	Ag ⁺		Cal	-96.9	-12.6	25	PC	893
	Ag ⁺	11.00	Pot			25	PrOH	892
	Zn ²⁺	<2.5	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	868
	Zn ²⁺	<9.5?	Pot			25?	MeCN, 0.5 M Me ₄ NClO ₄	868
	Zn ²⁺	<2.0	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	868
	Zn ²⁺	<4.1	Pot			25	MeOH (anhydrous), 0.05 M Et ₄ NClO ₄	405
	Zn ²⁺	<2.0	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	868

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Cd ²⁺	7.1	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	888
	Cd ²⁺	19.8	Polg			25?	MeCN, 0.5 M Me ₄ NNO ₃	888
	Cd ²⁺	9.6	Calc'd			25?	MeOH, 0.5 M Me ₄ NClO ₄	888
	Cd ²⁺	3.6	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NNO ₃	868
	Hg ⁺	18.2	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	888
	Hg ²⁺	20.9	Polg(anodic wave)			25	MeCN, 0.1M Et ₄ NClO ₄	902
	Hg ²⁺	15.1	Calc'd			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	888
	Hg ²⁺	23.0	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	872
	Tl ⁺	6.64	Pot			25	H ₂ O, <0.1 M Et ₄ NClO ₄	873
	Tl ⁺	6.6	Pot			25	H ₂ O	874
	Tl ⁺	6.3	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	888
	Tl ⁺	8.06	Pot			25	DMF	865
	Tl ⁺	11.04	Pot			25	EtOH, <0.1 M Et ₄ NClO ₄	873
	Tl ⁺	7.6	Pot			25	MeCN·H ₂ O (X _{MeCN} = 0.1)	874
	Tl ⁺	8.4	Spec			25	MeCN·H ₂ O (X _{MeCN} = 0.3)	874
	Tl ⁺	9.2	Spec			25	MeCN·H ₂ O (X _{MeCN} = 0.52)	874
	Tl ⁺	9.8	Spec			25	MeCN·H ₂ O (X _{MeCN} = 0.7)	874
	Tl ⁺	10.9	Spec			25	MeCN·H ₂ O (X _{MeCN} = 0.8)	874
	Tl ⁺	11.5	Spec			25	MeCN·H ₂ O (X _{MeCN} = 0.9)	874
	Tl ⁺	11.4	NMR			22	MeCN	532
	Tl ⁺	13.4	Polg			25?	MeCN, 0.5 M Me ₄ NClO ₄	888
	Tl ⁺	12.3	Spec			25	MeCN (Tl ⁺ competes with Ag ⁺)	874
	Tl ⁺	12.4	Spec			25	MeCN (Tl ⁺ competes with K ⁺)	874
	Tl ⁺	6.2	Pot			25?	MeOH, 0.5 M Me ₄ NClO ₄	888
	Tl ⁺	6.2	Pot			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	888
	Tl ⁺	8.4	NMR			25	PC, 0.1 M Hex ₄ NClO ₄	903
	Tl ⁺	9.0	Polg/CyVol			25	PC, 0.1 M Hex ₄ NClO ₄	903
	Pb ²⁺	12.7	Pot			25?	H ₂ O, 0.5 M Me ₄ NClO ₄	888
	Pb ²⁺	26.3	Polg			25?	MeCN, 0.5 M Me ₄ NClO ₄	888
	Pb ²⁺	12.95	ISE	-72.7(Cal)	3	25	MeOH, 0.05 M Et ₄ NClO ₄	332,419(logK)
	Pb ²⁺	10.41	Pot	-72.7(Cal)	-45.0	25	MeOH, 0.05 M Et ₄ NClO ₄	332,420(logK)
	Pb ²⁺	20.1	Polg			25?	MeOH, 0.5 M Me ₄ NNO ₃	888
	Pb ²⁺	6.3	Polg			25?	Me ₂ SO, 0.5 M Me ₄ NClO ₄	888
	UO ₂ ²⁺	none	Pot			25	H ₂ O, 1.0 M NaClO ₄	421
	UO ₂ ²⁺	7.70(1)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295, 334
	UO ₂ ²⁺	5.30(2)	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295, 334
	UO ₂ ²⁺	5.4(UO ₂) ₂ L						
	UO ₂ ²⁺		Spec			25	PC, 0.1 M Et ₄ NClO ₄	295, 334
	UO ₂ ²⁺	13.10	Spec			25	PC, 0.1 M Et ₄ NClO ₄	295, 334
	UO ₂ ²⁺	(UO ₂) ₂ L					(2UO ₂ ²⁺ + L)	295, 334
	NH ₄ ⁺	12.61	NMR			25	D ₂ O, sat'd CDCl ₃ (anion = picrate)	504
	Gly ⁺	3.48	Cal	-41.77	-73.5	25	MeOH	904
	DL-Ala ⁺	3.22	Cal	-15.40	10.0	25	MeOH	904
	DL-Phe ⁺	3.48	Cal	-10.21	32.3	25	MeOH	904
	L-Phe ⁺	3.75	Cal	-6.39	50.4	25	MeOH	904
	D-Phe ⁺	3.47	Cal	-5.69	47.3	25	MeOH	904
	DL-Pro ⁺	2.46	Cal	-5.20	29.6	25	MeOH	904
	DL-Ser ⁺	3.64	Cal	-15.74	16.9	25	MeOH	904
	DL-Trp ⁺	3.72	Cal	-7.92	44.6	25	MeOH	904
[2.2.2]-2	Ag ⁺	12.24	Pot	-67.7(Cal)	6	25	MeOH, 0.05 M Et ₄ NClO ₄	327
[2.2.2]-3	Pb ²⁺	13.03	ISE	-69.7(Cal)	15	25	MeOH, 0.05 M Et ₄ NClO ₄	419
[2.2.2]-3	Na ⁺	8.86	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
[2.2.2]-3	K ⁺	9.07	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
[2.2.2]-3	NH ₄ ⁺	8.36	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
[2.2.2]-4	H ⁺	9.68(1)	Pot			25	95% MeOH	877
[2.2.2]-4	H ⁺	7.52	Pot			25	95% MeOH	877
[2.2.2]-4	Li ⁺	<2	Pot			25	95% MeOH	877
[2.2.2]-4	Na ⁺	4.36	Pot			25	95% MeOH	877
[2.2.2]-4	K ⁺	5.47	Pot			25	95% MeOH	877
[2.2.2]-4	Rb ⁺	5.14	Pot			25	95% MeOH	877
[2.2.2]-4	Cs ⁺	3.71	Pot			25	95% MeOH	877
[2.2.2]-4	Mg ²⁺	<2	Pot			25	95% MeOH	877
[2.2.2]-4	Ca ²⁺	3.75	Pot			25	95% MeOH	877
[2.2.2]-4	Sr ²⁺	4.81	Pot			25	95% MeOH	877
[2.2.2]-4	Ba ²⁺	7.53	Pot			25	95% MeOH	877
[2.2.2]-5	H ⁺	9.43(1)	Pot			25	95% MeOH	877
[2.2.2]-5	H ⁺	6.32(2)	Pot			25	95% MeOH	877
[2.2.2]-5	Li ⁺	<2	Pot			25	95% MeOH	877
[2.2.2]-5	Na ⁺	5.75	Pot			25	95% MeOH	877
[2.2.2]-5	K ⁺	5.13	Pot			25	95% MeOH	877
[2.2.2]-5	Rb ⁺	4.31	Pot			25	95% MeOH	877
[2.2.2]-5	Cs ⁺	<2	Pot			25	95% MeOH	877
[2.2.2]-5	Mg ²⁺	3.63	Pot			25	95% MeOH	877
[2.2.2]-5	Ca ²⁺	6.64	Pot			25	95% MeOH	877
[2.2.2]-5	Sr ²⁺	7.21	Pot			25	95% MeOH	877
[2.2.2]-5	Ba ²⁺	8.62	Pot			25	95% MeOH	877
K ₂ [2.2.2]-1	Li ⁺	3.23	Spec			33	MeCN (anion = ClO ₄ ⁻)	906
K ₂ [2.2.2]-1	Li ⁺	3.13	Spec			33	MeCN (anion = Br ⁻)	906
K ₂ [2.2.2]-1	Li ⁺	>4	Spec			33	NMe (anion = ClO ₄ ⁻)	906
K ₂ [2.2.2]-1	Li ⁺	2.64	Spec			33	Py (anion = ClO ₄ ⁻)	906
K ₂ [2.2.2]-1	Li ⁺	3.12	Spec			33	THF (anion = ClO ₄ ⁻)	906

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	>4	Spec			33	DMF (anion = BPh ₄ ⁻)	960
	Na ⁺	3.96	Cal	-17.9	15.4	25	MeCN	408
	Na ⁺	>4	Spec			25	MeCN (anion = ClO ₄ ⁻)	906
	Na ⁺	nm	Cal			25	MeOH	408
	Na ⁺	>4	Spec			25	NMe (anion = BPh ₄ ⁻)	906
	Na ⁺	>4	Spec			25	Py (anion = ClO ₄ ⁻)	906
	K ⁺	2.20	Cal	-18.3	-19.5	25	MeCN	408
	K ⁺	nm	Cal			25	MeOH	408
	Rb ⁺	2.32	Cal	-4.2	30.2	25	MeCN	408
	Rb ⁺	nm	Cal			25	MeOH	408
	Cs ⁺	nm	Cal			25	MeCN	408
	Cs ⁺	nm	Cal			25	MeOH	408
	Cs ⁺	1.67	Spec			25	NMe (anion = SCN ⁻)	906
	Cs ⁺	1.96	Spec			25	Py (anion = BPh ₄ ⁻)	906
	Ca ²⁺	3.58	Cal	-18.8	5.0	25	MeOH	408
	Sr ²⁺	4.01	Cal	-11.8	36.9	25	MeOH	408
	Ba ²⁺	>5	Cal	-32.2		25	MeCN	408
	Ba ²⁺	2.90	Cal	-14.5	6.7	25	MeOH	408
	Ag ⁺	nm	Cal			25	MeCN	408
	Ag ⁺	nm	Cal			25	MeOH	408
	Pb ²⁺	5.39	ISE	-17.9(Cal)	42.6	25	MeOH, 0.05 M Et ₄ NClO ₄	408
K ₂ [2.2.2]-2	Na ⁺	6.12	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
	K ⁺	6.15	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
	NH ₄ ⁺	6.49	Solv Extr-UV (Pic Anal)			22	D ₂ O sat'd CDCl ₃ (anion = picrate)	713
Cy ₂ [2.2.2]-1	Na ⁺	6.02	ISE	-27.4(Cal)	22.8	25	MeOH, 0.05 M Et ₄ NNO ₃	905
	K ⁺	6.92	ISE	-36.1(Cal)	10.7	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Rb ⁺	5.65	Pot	-34.3(Cal)	-7.4	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Cs ⁺	2.55	Cal	-3.3	37.6	25	MeOH	905
	Ca ²⁺	5.12	Pot	>-1(Cal)		25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Sr ²⁺	8.59	Pot	-5.4(Cal)	145.6	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Ba ²⁺	9.75	Pot	-35.5(Cal)	66.8	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Ag ⁺	12.39	Pot	-61.4(Cal)	30	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Pb ²⁺	11.55	ISE	-48.4(Cal)	58	25	MeOH, 0.05 M Et ₄ NClO ₄	419
B[2.2.2]-1	H ⁺	9.8(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NCl	907
	H ⁺	6.1(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NCl	907
	Li ⁺	1.60	NMR			40	1mol% LiCl in 45mol% AlCl ₃ melt	40
	Na ⁺	7.4	ISE			25	MeOH	908
	K ⁺	9.0	ISE			25	MeOH	908
	Rb ⁺	7.2	ISE			25	MeOH	908
	Ca ²⁺	3.8	Kin			25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Ca ²⁺	4.05	Pot			25	H ₂ O	867
	Ca ²⁺	2.60	Pot			25	DMF	867
	Ca ²⁺	7.04	Pot	-17.7(Cal)	74.8	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Ca ²⁺	<2	Pot			25	Me ₂ SO	867
	Ca ²⁺	10.10	Pot			25	PC	867
	Sr ²⁺	7.4	Kin			25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Sr ²⁺	7.50	Pot			25	H ₂ O	867
	Sr ²⁺	6.10	Pot			25	DMF	867
	Sr ²⁺	10.32	Pot	-34.3(Cal)	81.5	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Sr ²⁺	4.33	Pot			25	Me ₂ SO	867
	Ba ²⁺	8.0	Kin			25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Ba ²⁺	7.91	Pot			25	H ₂ O	867
	Ba ²⁺	6.46	Pot			25	DMF	867
	Ba ²⁺	10.99	Pot	-53.9(Cal)	28.5	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Ba ²⁺	5.10	Pot			25	Me ₂ SO	867
	Ag ⁺	9.25	Pot			25	H ₂ O, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	10.28	Pot			25	EtOH, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	11.42	Pot			25	MeOH, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	11.98	Pot	-65.1(Cal)	10	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Tl ⁺	5.84	Pot			25	H ₂ O, < 0.1 M Et ₄ NClO ₄	873
	Tl ⁺	6.79	Pot			25	DMF, < 0.1 M Et ₄ NClO ₄	873
	Tl ⁺	8.58	Pot			25	EtOH, < 0.1 M Et ₄ NClO ₄	873
	Tl ⁺	10.3	Pot			25	MeCN	874
	Tl ⁺	8.71	Pot			25	MeOH, < 0.1 M Et ₄ NClO ₄	873
	Tl ⁺	4.67	Pot			25	Me ₂ SO, < 0.1 M Et ₄ NClO ₄	873
	Tl ⁺	10.73	Pot			25	PC, < 0.1 M Et ₄ NClO ₄	873
	Pb ²⁺	12.22	ISE	-61.2(Cal)	28	25	MeOH, 0.05 M Et ₄ NClO ₄	419
	Pb ²⁺	6.30	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	870
B[2.2.2]-2	H ⁺	9.28	Spec			25	Diox-H ₂ O (50:50)	909
	H ⁺	9.5	Spec			25	Diox-H ₂ O (70:30)	909
B ₂ [2.2.2]-1	H ⁺	9.5(1)	Sol			25	H ₂ O	910
	H ⁺	6.2(2)	Spec			25	H ₂ O	907
	Li ⁺		Cal	-33.0		25	MeCN	911
	Li ⁺	6.06	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	Li ⁺	10.50	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	912
	Li ⁺		Cal	-36.7		25	PC	911
	Li ⁺	5.61	Pot			25	PC, 0.1 M Et ₄ NClO ₄	912
	Na ⁺		Cal	-41.2		25	DMF	911
	Na ⁺	5.15	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	912
	Na ⁺	5.32	Pot			25	DMF	865
	Na ⁺		Cal	-61.4		25	MeCN	911

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	8.34	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	Na ⁺	7.37	Pot			25	MeOH	865
	Na ⁺		Cal	-46.9		25	Me ₂ SO	911
	Na ⁺	4.15	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	912
	Na ⁺	4.48	Pot			25	Me ₂ SO	865
	Na ⁺	12.58	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	912
	Na ⁺		Cal	-66.0		25	PC	911
	Na ⁺	9.45	ISE			25	PC	865
	Na ⁺	9.73	Pot			25	PC, 0.1 M Et ₄ NClO ₄	912
	Na ⁺	9.20	Pot			25	PC	865
	K ⁺		Cal	-55.3		25	DMF	911
	K ⁺	6.10	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	912
	K ⁺	6.73	Pot			25	DMF	865
	K ⁺		Cal	-71.1		25	MeCN	911
	K ⁺	8.66	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	K ⁺	8.60	Pot			25	MeOH	865
	K ⁺		Cal	-59.3		25	Me ₂ SO	911
	K ⁺	5.8	ISE			25	Me ₂ SO	865
	K ⁺	5.30	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	912
	K ⁺	6.12	Pot			25	Me ₂ SO	865
	K ⁺	11.22	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	812
	K ⁺		Cal	-72.0		25	PC	911
	K ⁺	8.75	ISE			25	PC	865
	K ⁺	9.00	Pot			25	PC	865
	K ⁺	9.17	Pot			25	PC, 0.1 M Et ₄ NClO ₄	912
	Rb ⁺		Cal	-47.6		25	DMF	911
	Rb ⁺	4.32	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	912
	Rb ⁺		Cal	-60.7		25	MeCN	911
	Rb ⁺	7.70	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	Rb ⁺		Cal	-53.6		25	Me ₂ SO	911
	Rb ⁺	4.65	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	912
	Rb ⁺	8.40	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	912
	Rb ⁺		Cal	-60.1		25	PC	911
	Rb ⁺	6.65	Pot			25	PC, 0.1 M Et ₄ NClO ₄	912
	Cs ⁺		Cal	-42.8		25	MeCN	911
	Cs ⁺	3.46	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	Cs ⁺		Cal	-34.3		25	Me ₂ SO	911
	Cs ⁺	4.04	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	912
	Cs ⁺		Cal	-42.8		25	PC	911
	Ca ²⁺	2.66	Kin			25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Ca ²⁺	3.07	Pot			25	H ₂ O	913
	Ca ²⁺	3.45	Pot			25	H ₂ O	867
	Ca ²⁺	<2	Pot			25	DMF	867
	Ca ²⁺	5.96	Pot	-6.4(Cal)	92.3	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Ca ²⁺	<2	Pot			25	Me ₂ SO	867
	Ca ²⁺	9.74	Pot			25	PC	867
	Sr ²⁺	5.7	Kin			25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Sr ²⁺	6.38	Pot			25	H ₂ O	867
	Sr ²⁺	4.89	Pot			25	DMF	867
	Sr ²⁺	8.83	Pot	-25.9(Cal)	81.5	25	MeOH, 0.05 M Et ₄ NClO ₄	905
	Sr ²⁺	3.58	Pot			25	Me ₂ SO	867
	Sr ²⁺	13.4	Pot			25	PC	867
	Ba ²⁺	5.43	Kin			25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Ba ²⁺	5.65	Pot			25	H ₂ O	867
	Ba ²⁺	4.37	Pot			25	DMF	867
	Ba ²⁺	4.32	Pot			25	DMF	865
	Ba ²⁺	8.85	Pot	-33.5(Cal)	56.4	25	MeOH	905,914(logK)
	Ba ²⁺	8.87	Pot			25	MeOH	865
	Ba ²⁺	3.46	Pot			25	Me ₂ SO	867
	Ba ²⁺	3.48	Pot			25	Me ₂ SO	865
	Ba ²⁺	13.5	Pot			25	PC	865
	Ag ⁺		Cal	-64.1		25	DMF	911
	Ag ⁺	9.20	Pot			25	DMF, 0.1 M Et ₄ NClO ₄	912
	Ag ⁺	9.31	Pot			25	DMF, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	9.67	Pot			25	DMF	865
	Ag ⁺	10.85	Pot			25	EtOH, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺		Cal	-52.7		25	MeCN	911
	Ag ⁺	8.16	Pot			25	MeCN, 0.1 M Et ₄ NClO ₄	912
	Ag ⁺	8.31	Pot			25	MeCN	865
	Ag ⁺	11.84	Pot	-65.4(Cal)	6	25	MeOH, 0.05 M Et ₄ NClO ₄	327
	Ag ⁺	11.78	Pot			25	MeOH	865
	Ag ⁺		Cal	-49.6		25	Me ₂ SO	911
	Ag ⁺	6.40	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	912
	Ag ⁺	6.84	Pot			25	Me ₂ SO, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	6.77	Pot			25	Me ₂ SO	865
	Ag ⁺	16.63	Pot			25	NMe, 0.1 M Et ₄ NClO ₄	911
	Ag ⁺		Cal	-96.4		25	PC	912
	Ag ⁺	15.58	Pot			25	PC, 0.1 M Et ₄ NClO ₄	912
	Ag ⁺	15.54	Pot			25	PC, < 0.1 M Et ₄ NClO ₄	873
	Ag ⁺	15.88	Pot			25	PC	865
	Tl ⁺	6.14	Pot			25	DMF	865
	Tl ⁺	6.16	Pot			25	DMF, <0.1 M Et ₄ NClO ₄	873
	Tl ⁺	8.59	Pot			25	EtOH, <0.1 M Et ₄ NClO ₄	873
	Tl ⁺	10.2	Pot			25	MeCN	874
	Tl ⁺	7.9	Pot			25	MeOH	865

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
(1,3-B)[2.2.2]·1	Tl ⁺	8.30	Pot	-52.7 (Cal)	31	25	MeOH, <0.1 M Et ₄ NClO ₄	873	
	Tl ⁺	4.58	Pot			25	Me ₂ SO	865	
	Tl ⁺	9.81	Pot			25	PC	865	
	Pb ²⁺	10.90	ISE			25	MeOH, 0.05 M Et ₄ NClO ₄	419	
	Pb ²⁺	5.40	Pot			25	Me ₂ SO, 0.1 M Et ₄ NClO ₄	870	
	H ⁺	10.96(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	H ⁺	9.49(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	H ⁺	7.37(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	Ni ²⁺	7.11	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	Cu ²⁺	14.80	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	Zn ²⁺	8.36	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
	Cd ²⁺	9.44	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	758	
(1,4-B)[2.2.2]·1	Pb ²⁺	13.33	Pot	25	H ₂ O, 0.1 M Me ₄ NCl	758			
	Na ⁺	3.0	ISE	25	MeOH	908			
	K ⁺	4.7	ISE	25	MeOH	908			
	Rb ⁺	3.7	ISE	25	MeOH	908			
(1,4-B)[2.2.2]·2	Na ⁺	2.65	ISE	25	MeOH	908			
	K ⁺	4.6	ISE	25	MeOH	908			
	Rb ⁺	3.4	ISE	25	MeOH	908			
A ₂ [2.2.2]·1	H ⁺	7309.99(1)	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	H ⁺	7.25(2)	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	H ⁺	3.30(3)	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	H ⁺	2.70(4)	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Ba ²⁺	4.8	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Ba ²⁺	2.7	(BaHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Co ²⁺	4.9	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Co ²⁺	2.7	(CoHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Ni ²⁺	4.8	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Ni ²⁺	2.8	(NiHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Cu ²⁺	13.5	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Cu ²⁺	7.6	(CuHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Zn ²⁺	5.6	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Zn ²⁺	2.6	(ZnHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Cd ²⁺	9.7	Pot	?	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	Cd ²⁺	5.6	(CdHL)	Pot	?	H ₂ O, 0.1 N Me ₄ NBr	915		
	poly(A ₂ [2.2.2])·1	H ⁺	9.13(1)	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703	
		H ⁺	5.24(2)	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703	
		H ⁺	2.0(3)	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703	
		Na ⁺	0.9	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703	
K ⁺		1.4	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
Ca ²⁺		2.3	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
Sr ²⁺		3.4	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
Ba ²⁺		4.1	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
Cu ²⁺		11.3	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
Cd ²⁺		6.0	Pot	25?	?	H ₂ O, 0.1 M Me ₄ NBr	703		
CHART LXXII									
A ₆ [2.2.2]·1		H ⁺	10.10(1)	Pot	25	?	H ₂ O, 0.1 M TsONa	916	
	H ⁺	10.45(2)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	9.40(3)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	8.65(4)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	7.00(5)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	6.75(6)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	4.95(7)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	4.15(8)	Pot	25	?	H ₂ O, 0.1 M TsONa	916		
	H ⁺	10.45(1)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	10.30(2)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	9.55(3)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	8.60(4)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	7.45(5)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	7.30(6)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	5.40(7)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	H ⁺	4.60(8)	Pot	25	?	H ₂ O, 0.1 M Me ₄ NCl	916		
	A ₆ [2.2.2]·2	H ⁺	10.35(1)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917	
		H ⁺	9.88(2)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917	
H ⁺		8.87(3)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917		
H ⁺		8.38(4)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917		
H ⁺		8.14(5)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917		
H ⁺		7.72(6)	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917		
H ⁺		62.04	Pot	25	?	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF (7H ⁺ +2F ⁻ +L)	917		
Cu ²⁺		15.39	Pot	25	?	H ₂ O, 0.1 M NaClO ₄	917		
Cu ²⁺		13.37	(Cu ₂ L)	Pot	25	H ₂ O, 0.1 M NaClO ₄	917		
Cu ²⁺		10.08	(CuHL)	Pot	25	H ₂ O, 0.1 M NaClO ₄	917		
							(CuL ²⁺ + H ⁺)	917	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
	Cu ²⁺	8.70	Pot			25	H ₂ O, 0.1 M NaClO ₄		
	(CuH ₂ L)						(CuHL ²⁺ + H ⁺)	917	
	Cu ²⁺	7.62	Pot			25	H ₂ O, 0.1 M NaClO ₄		
	(CuH ₃ L)						(CuH ₂ L ⁴⁺ + H ⁺)	917	
K ₃ A ₆ [2.2.2]-1	H ⁺	7.96(1)	Pot			25	H ₂ O, 0.15 M NaClO ₄	918	
	H ⁺	7.81(2)	Pot			25	H ₂ O, 0.15 M NaClO ₄	918	
	H ⁺	7.92(1)	Pot			25	H ₂ O, 0.15 M KBr	918	
	H ⁺	7.84(2)	Pot			25	H ₂ O, 0.15 M KBr	918	
(1,3-B) ₆ A ₆ [2.2.2]-1	Li ⁺	2.18	NMR			30	MeCN	919	
T ₂ [2.2.2]-1	Li ⁺	2.2	ISE			25?	MeOH	10	
(Chart LXXI)	Na ⁺	6.0	ISE			25?	MeOH	10	
	K ⁺	7.0	ISE			25?	MeOH	10	
	Rb ⁺	4.4	ISE			25?	MeOH	10	
	Cs ⁺	2.3	ISE			25?	MeOH	10	
	Ag ⁺	9.5	ISE			25?	MeOH	10	
	Ag ⁺	13.4	Pot	-93.2(Cal)	-56.0	25	MeOH	696	
	Tl ⁺	7.5	ISE			25?	MeOH	10	
T ₃ [2.2.2]-1	Li ⁺	2.3	ISE			25?	MeOH	10	
(Chart LXXI)	Na ⁺	2.8	ISE			25?	MeOH	10	
	K ⁺	2.4	ISE			25?	MeOH	10	
	Rb ⁺	<2	ISE			25?	MeOH	10	
	Cs ⁺	<2	ISE			25?	MeOH	10	
	Ag ⁺	8.0	ISE			25?	MeOH	10	
	Tl ⁺	5.2	ISE			25?	MeOH	10	
[2.2.Anthra]-1	H ⁺	9.97(1)	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	H ⁺	8.42(2)	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	Tl ⁺	8.52	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	Ag ⁺	9.51	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
[2.2.Anthra]-2	H ⁺	10.79(1)	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	H ⁺	9.52(2)	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	Ag ⁺	9.36	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
	Tl ⁺	7.07	Pot/Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	920	
[2.2.B ₂ T ₂]-1	Na ⁺	2.89	Solv Extr-NMR (ANS Anal)			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (8:2/v:v) (ANS = 8-anilino-naphthalene- 1-sulfonate)	711	
	K ⁺	3.35	Solv Extr-NMR (ANS Anal)			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (8:2/v:v) (ANS = 8-anilino-naphthalene- 1-sulfonate)	711	
	Rb ⁺	3.14	Solv Extr-NMR (ANS Anal)			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (8:2/v:v) (ANS = 8-anilino-naphthalene- 1-sulfonate)	711	
	Cs ⁺	2.80	Solv Extr-NMR (ANS Anal)			30	<i>o</i> -C ₆ H ₄ Cl ₂ / <i>n</i> -BuOH (8:2/v:v), (ANS = 8-anilino-naphthalene- 1-sulfonate)	711	
[3.2.2]-1	Hg ²⁺	24.0	Polg			25	PC, 0.1 M Hex ₄ NClO ₄	872	
[3.2.2]-2	H ⁺	9.36(1)	Pot			25	95% MeOH	877	
	H ⁺	6.80(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	4.65	Pot			25	95% MeOH	877	
	K ⁺	5.15	Pot			25	95% MeOH	877	
	Rb ⁺	5.08	Pot			25	95% MeOH	877	
	Cs ⁺	4.05	Pot			25	95% MeOH	877	
	Mg ²⁺	<2	Pot			25	95% MeOH	877	
	Ca ²⁺	4.12	Pot			25	95% MeOH	877	
	Sr ²⁺	6.53	Pot			25	95% MeOH	877	
	Ba ²⁺	6.64	Pot			25	95% MeOH	877	
[3.2.2]-3	H ⁺	9.05(1)	Pot			25	95% MeOH	877	
	H ⁺	6.45(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	5.15	Pot			25	95% MeOH	877	
	K ⁺	5.63	Pot			25	95% MeOH	877	
	Rb ⁺	4.03	Pot			25	95% MeOH	877	
	Cs ⁺	<2	Pot			25	95% MeOH	877	
	Mg ²⁺	3.71	Pot			25	95% MeOH	877	
	Ca ²⁺	8.73	Pot			25	95% MeOH	877	
	Sr ²⁺	8.94	Pot			25	95% MeOH	877	
	Ba ²⁺	8.43	Pot			25	95% MeOH	877	
CHART LXXIII									
A ₂ [3.3.1]-1	K ⁺	1.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921	
	Rb ⁺	1.32	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921	
	NH ₄ ⁺	1.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921	
[3.3.2]-1	H ⁺	9.27(1)	Pot			25	95% MeOH	877	
	H ⁺	7.04(2)	Pot			25	95% MeOH	877	
	Li ⁺	<2	Pot			25	95% MeOH	877	
	Na ⁺	4.46	Pot			25	95% MeOH	877	
	K ⁺	3.23	Pot			25	95% MeOH	877	
	Rb ⁺	3.15	Pot			25	95% MeOH	877	
	Cs ⁺	2.86	Pot			25	95% MeOH	877	
	Mg ²⁺	<2	Pot			25	95% MeOH	877	
	Ca ²⁺	3.72	Pot			25	95% MeOH	877	
	Sr ²⁺	4.64	Pot			25	95% MeOH	877	
	Ba ²⁺	5.21	Pot			25	95% MeOH	877	
[3.3.2]-2	H ⁺	9.04(1)	Pot			25	95% MeOH	877	
	H ⁺	6.72(2)	Pot			25	95% MeOH	877	
	Li ⁺	3.59	Pot			25	95% MeOH	877	
	Na ⁺	5.12	Pot			25	95% MeOH	877	
	K ⁺	3.78	Pot			25	95% MeOH	877	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Rb ⁺	3.25	Pot			25	95% MeOH	877
	Cs ⁺	2.74	Pot			25	95% MeOH	877
	Mg ²⁺	3.24	Pot			25	95% MeOH	877
	Ca ²⁺	6.81	Pot			25	95% MeOH	877
	Sr ²⁺	7.37	Pot			25	95% MeOH	877
	Ba ²⁺	7.08	Pot			25	95% MeOH	877
Carbon[3.2.2]-1 (Chart LXXII)	Na ⁺	4.26	ISE			25	MeOH	538
	K ⁺	2.66	ISE			25	MeOH	538
Carbon†[3.3.2]-1 (Chart LXXII)	Na ⁺	5.38	ISE			25	MeOH	538
	K ⁺	5.94	ISE			25	MeOH	538
Carbon[3.3.3]-1 (Chart LXXII)	Na ⁺	4.33	ISE			25	MeOH	538
	K ⁺	7.06	ISE			25	MeOH	538
Carbon[3.3.3]-2	Na ⁺	1.1	Pot			25	MeOH	542
	K ⁺	2.2	Pot			25	MeOH	542, 542a
	Rb ⁺	1.9	Pot			25	MeOH	542, 542a
	Cs ⁺	1.6	Pot			25	MeOH	542, 542a
Carbon[3.3.3]-3	Na ⁺	<1.2	Pot			25	MeOH	542
	Cs ⁺	1.4	Pot			25	MeOH	542
Carbon[3.3.3]-4	Na ⁺	1.0	Pot			25	MeOH	542
	K ⁺	2.4	Pot			25	MeOH	542
	Rb ⁺	2.1	Pot			25	MeOH	542
	Cs ⁺	1.4	Pot			25	MeOH	542
B[3.3.2]-1	H ⁺	10.00	Spec			25	Diox·H ₂ O (50:50)	909
B[3.3.2]-2	H ⁺	9.80	Spec			25	Diox·H ₂ O (50:50)	909
A ₆ [3.3.3]-1	H ⁺	9.3(1)	NMR?			25	H ₂ O	922
	H ⁺	9.0(2)	NMR?			25	H ₂ O	922
	H ⁺	7.9(3)	NMR?			25	H ₂ O	922
	H ⁺	7.4(4)	NMR?			25	H ₂ O	922
	H ⁺	6.3(5)	NMR?			25	H ₂ O	922
	H ⁺	5.7(6)	NMR?			25	H ₂ O	922
	H ⁺	<3.0(7)	NMR?			25	H ₂ O	922
	H ⁺	<3.0(8)	NMR?			25	H ₂ O	922
	H ⁺	9.89(1)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	9.17(2)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	8.26(3)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	7.89(4)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	7.28(5)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	6.60(6)	Pot			25	H ₂ O, 0.1 M KCl	923, 924
	H ⁺	9.89(1)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	9.23(2)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	8.29(3)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	7.65(4)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	6.64(5)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	6.01(6)	Pot			25	H ₂ O, 0.1 M KCl	925
	H ⁺	9.93(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	9.31(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	8.55(3)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	7.91(4)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	7.32(5)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	6.63(6)	Pot			25	H ₂ O, 0.1 M KNO ₃	923
	H ⁺	9.92(1)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	9.26(2)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	8.22(3)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	7.53(4)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	6.68(5)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	6.05(6)	Pot			25	H ₂ O, I = 0.1 ((Me ₃) ₃ PhSO ₃ Na)	923
	H ⁺	10.290(1)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	9.751(2)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	8.978(3)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	8.589(4)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	7.930(5)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	7.216(6)	Pot			25	H ₂ O, 1.0 M NaBr	924
	H ⁺	10.136(1)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	9.691(2)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	8.894(3)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	8.653(4)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	8.065(5)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	7.454(6)	Pot			25	H ₂ O, 1.0 M NaCl	924
	H ⁺	10.217(1)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	9.736(2)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	8.935(3)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	8.525(4)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	7.907(5)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	7.318(6)	Pot			25	H ₂ O, 0.5 M NaCl	924
	H ⁺	9.89(1)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	9.23(2)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	8.29(3)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	7.65(4)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	6.64(5)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	6.01(6)	Pot			25	H ₂ O, 0.1 M NaClO ₄	923, 924
	H ⁺	10.384(1)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	H ⁺	9.815(2)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K-mol	T , °C	conditions ^c	ref
	H ⁺	9.010(3)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	H ⁺	8.404(4)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	H ⁺	7.444(5)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	H ⁺	6.954(6)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	H ⁺	9.99(1)	Pot			25	H ₂ O, 0.09 M NaClO ₄	
	H ⁺	9.02(2)	Pot			25	+ 0.01 M NaF	917
	H ⁺	7.98(3)	Pot			25	H ₂ O, 0.09 M NaClO ₄	
	H ⁺	7.20(4)	Pot			25	+ 0.01 M NaF	917
	H ⁺	6.40(5)	Pot			25	H ₂ O, 0.09 M NaClO ₄	
	H ⁺	5.67(6)	Pot			25	+ 0.01 M NaF	917
	H ⁺	36.21	Pot			25	H ₂ O, 0.09 M NaClO ₄ +	
	H ⁺	44.21	Pot			25	0.01 M NaF (4H ⁺ +F ⁻ +L)	917
	H ⁺	50.19	Pot			25	H ₂ O, 0.09 M NaClO ₄ +	
	H ⁺	56.18	Pot			25	0.01 M NaF (5H ⁺ +F ⁻ +L)	917
	H ⁺	10.38(1)	Pot			25	H ₂ O, 0.09 M NaClO ₄ +	
	H ⁺	9.81(2)	Pot			25	0.01 M NaF (6H ⁺ +F ⁻ +L)	917
	H ⁺	9.05(3)	Pot			25	H ₂ O, 0.05 M NaF	
	H ⁺	8.80(4)	Pot			25	+ 0.95 M NaClO ₄	924
	H ⁺	8.5(5)	Pot			25	H ₂ O, 0.05 M NaF	
	H ⁺	8.1(6)	Pot			25	+ 0.95 M NaClO ₄	924
	H ⁺	10.26(1)	Pot			25	H ₂ O, 0.05 M NaF	
	H ⁺	9.88(2)	Pot			25	+ 0.95 M NaClO ₄	924
	H ⁺	9.18(3)	Pot			25	H ₂ O, 0.025 M NaF	
	H ⁺	8.52(4)	Pot			25	+ 1.0 M NaClO ₄	924
	H ⁺	8.17(5)	Pot			25	H ₂ O, 0.025 M NaF	
	H ⁺	7.26(6)	Pot			25	+ 1.0 M NaClO ₄	924
	H ⁺	5.02(7)	Pot			25	H ₂ O, 0.025 M NaF	
	H ⁺	10.262(1)	Pot			25	+ 1.0 M NaClO ₄	924
	H ⁺	9.778(2)	Pot			25	H ₂ O, 1.0 M NaI	924
	H ⁺	8.958(3)	Pot			25	H ₂ O, 1.0 M NaI	924
	H ⁺	8.427(4)	Pot			25	H ₂ O, 1.0 M NaI	924
	H ⁺	7.696(5)	Pot			25	H ₂ O, 1.0 M NaI	924
	H ⁺	6.785(6)	Pot			25	H ₂ O, 1.0 M NaI	924
	H ⁺	9.60(1)	Pot			25	H ₂ O, 0.1 M TsONa	926
	H ⁺	9.35(2)	Pot			25	H ₂ O, 0.1 M TsONa	926
	H ⁺	8.30(3)	Pot			25	H ₂ O, 0.1 M TsONa	926
	H ⁺	7.75(4)	Pot			25	H ₂ O, 0.1 M TsONa	926
	H ⁺	7.00(5)	Pot			25	H ₂ O, 0.1 M TsONa	926
	H ⁺	5.90(6)	Pot			25	H ₂ O, 0.1 M TsONa	926
	Co ²⁺	11.20	Pot			25	H ₂ O, 0.1 M KCl	923, 925
	Co ²⁺	5.60						
	Co ²⁺	(Co ₂ L)	Pot			25	H ₂ O, 0.1 M KCl	923, 925
	Co ²⁺	8.52						
	Co ²⁺	(CoHL)	Pot			25	H ₂ O, $I = 0.1$ (CoL ²⁺ + H ⁺)	923
	Co ²⁺	7.16						
	Co ²⁺	(CoH ₂ L)	Pot			25	H ₂ O, $I = 0.1$ (CoHL ³⁺ + H ⁺)	923
	Co ²⁺	6.85						
	Ni ²⁺	(CoH ₃ L)	Pot			25	H ₂ O, $I = 0.1$ (CoH ₂ L ⁴⁺ + H ⁺)	923
	Ni ²⁺	11.70	Pot			25	H ₂ O, $I = 0.1$	923
	Ni ²⁺	~6.8						
	Ni ²⁺	(Ni ₂ L)	Pot			25	H ₂ O, $I = 0.1$	923
	Ni ²⁺	8.72						
	Ni ²⁺	(NiHL)	Pot			25	H ₂ O, $I = 0.1$ (NiL ²⁺ + H ⁺)	923
	Ni ²⁺	7.76						
	Ni ²⁺	(NiH ₂ L)	Pot			25	H ₂ O, $I = 0.1$ (NiHL ³⁺ + H ⁺)	923
	Ni ²⁺	5.45						
	Ni ²⁺	(NiH ₃ L)	Pot			25	H ₂ O, $I = 0.1$ (NiH ₂ L ⁴⁺ + H ⁺)	923
	Cu ²⁺	18.15	Pot			25	H ₂ O, 1.0 M NaBr	924
	Cu ²⁺	11.2						
	Cu ²⁺	(Cu ₂ L)	Pot			25	H ₂ O, 1.0 M NaBr	924
	Cu ²⁺	9.09	Pot			25	H ₂ O, 1.0 M NaBr	
	Cu ²⁺	(CuHL)					(CuL ²⁺ + H ⁺)	924
	Cu ²⁺	8.35	Pot			25	H ₂ O, 1.0 M NaBr	
	Cu ²⁺	(CuH ₂ L)					(CuHL ³⁺ + H ⁺)	924

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Cu ²⁺	7.04 (CuH ₃ L)	Pot			25	H ₂ O, 1.0 M NaBr (CuH ₂ L ⁴⁺ + H ⁺)	924
	Cu ²⁺	40.47 (Cu ₂ LOH)	Pot			25	H ₂ O, 1.0 M NaBr (2Cu ²⁺ + L + OH ⁻)	924
	Cu ²⁺	16.54	Pot			25	H ₂ O, 0.1 M NaCl	927
	Cu ²⁺	12.51 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaCl	927
	Cu ²⁺	8.43 (CuHL)	Pot			25	H ₂ O, 0.1 M NaCl (CuL ²⁺ + H ⁺)	927
	Cu ²⁺	8.12 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaCl (CuHL ³⁺ + H ⁺)	927
	Cu ²⁺	6.99 (CuH ₃ L)	Pot			25	H ₂ O, 0.1 M NaCl (CuH ₂ L ⁴⁺ + H ⁺)	927
	Cu ²⁺	17.34	Pot			25	H ₂ O, 1.0 M NaCl	924
	Cu ²⁺	12.8 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M NaCl	924
	Cu ²⁺	9.09 (CuHL)	Pot			25	H ₂ O, 1.0 M NaCl (CuL ²⁺ + H ⁺)	924
	Cu ²⁺	8.65 (CuH ₂ L)	Pot			25	H ₂ O, 1.0 M NaCl (CuHL ³⁺ + H ⁺)	924
	Cu ²⁺	7.67 (CuH ₃ L)	Pot			25	H ₂ O, 1.0 M NaCl (CuH ₂ L ⁴⁺ + H ⁺)	924
	Cu ²⁺	39.36 (Cu ₂ LOH)	Pot			25	H ₂ O, 1.0 M NaCl (2Cu ²⁺ + L + OH ⁻)	924
	Cu ²⁺	17.36	Pot			25	H ₂ O, 0.1 M NaClO ₄	927
	Cu ²⁺	9.96 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄	927
	Cu ²⁺	8.13 (CuHL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuL ²⁺ + H ⁺)	927
	Cu ²⁺	7.51 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuHL ³⁺ + H ⁺)	927
	Cu ²⁺	5.36 (CuH ₃ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuH ₂ L ⁴⁺ + H ⁺)	927
	Cu ²⁺	17.59	Pot			25	H ₂ O, 0.1 M NaClO ₄	917
	Cu ²⁺	10.73 (Cu ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄	917
	Cu ²⁺	7.92 (CuHL)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuL ²⁺ + H ⁺)	917
	Cu ²⁺	7.14 (CuH ₂ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuHL ³⁺ + H ⁺)	917
	Cu ²⁺	5.20 (CuH ₃ L)	Pot			25	H ₂ O, 0.1 M NaClO ₄ (CuH ₂ L ⁴⁺ + H ⁺)	917
	Cu ²⁺	16.54	Pot			25	H ₂ O, $I = 0.1$	923
	Cu ²⁺	12.67 (Cu ₂ L)	Pot			25	H ₂ O, $I = 0.1$	923
	Cu ²⁺	8.78 (CuHL)	Pot			25	H ₂ O, $I = 0.1$ (CuL ²⁺ + H ⁺)	923
	Cu ²⁺	7.70 (CuH ₂ L)	Pot			25	H ₂ O, $I = 0.1$ (CuHL ³⁺ + H ⁺)	923
	Cu ²⁺	6.87 (CuH ₃ L)	Pot			25	H ₂ O, $I = 0.1$ (CuH ₂ L ⁴⁺ + H ⁺)	923
	Cu ²⁺	18.68	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	Cu ²⁺	11.5 (Cu ₂ L)	Pot			25	H ₂ O, 1.0 M NaClO ₄	924
	Cu ²⁺	9.23 (CuHL)	Pot			25	H ₂ O, 1.0 M NaClO ₄ (CuL ²⁺ + H ⁺)	924
	Cu ²⁺	8.15 (CuH ₂ L)	Pot			25	H ₂ O, 1.0 M NaClO ₄ (CuHL ³⁺ + H ⁺)	924
	Cu ²⁺	5.75 (CuH ₃ L)	Pot			25	H ₂ O, 1.0 M NaClO ₄ (CuH ₂ L ⁴⁺ + H ⁺)	924
	Cu ²⁺	40.76 (Cu ₂ LOH)	Pot			25	H ₂ O, 1.0 M NaClO ₄ (2Cu ²⁺ + L + OH ⁻)	924
	Cu ²⁺	17.85	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl	924
	Cu ²⁺	13.2 (Cu ₂ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl	924
	Cu ²⁺	9.26 (CuHL)	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl (CuL ²⁺ + H ⁺)	924
	Cu ²⁺	8.50 (CuH ₂ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl (CuHL ³⁺ + H ⁺)	924
	Cu ²⁺	7.57 (CuH ₃ L)	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl (CuH ₂ L ⁴⁺ + H ⁺)	924
	Cu ²⁺	40.33 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.5 M NaClO ₄ + 0.5 M NaCl (2Cu ²⁺ + L + OH ⁻)	924
	Cu ²⁺	18.30	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄	924
	Cu ²⁺	14.6 (Cu ₂ L)	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄	924
	Cu ²⁺	9.60 (CuHL)	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄ (CuL ²⁺ + H ⁺)	924
	Cu ²⁺	8.55 (CuH ₂ L)	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄ (CuHL ³⁺ + H ⁺)	924
	Cu ²⁺	7.35 (CuH ₃ L)	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄ (CuH ₂ L ⁴⁺ + H ⁺)	924
	Cu ²⁺	40.33 (Cu ₂ LOH)	Pot			25	H ₂ O, 0.025 M NaF + 0.975 M NaClO ₄ (2Cu ²⁺ + L + OH ⁻)	924
	Zn ²⁺	11.86	Pot			25	H ₂ O, $I = 0.1$	923
	Zn ²⁺	6.36 (Zn ₂ L)	Pot			25	H ₂ O, $I = 0.1$	923

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref	
	Zn ²⁺	8.47							
	(ZnHL)	7.72	Pot			25	H ₂ O, I = 0.1 (ZnL ²⁺ + H ⁺)	923	
	Zn ²⁺	7.72							
	(ZnH ₂ L)	7.03	Pot			25	H ₂ O, I = 0.1 (ZnHL ³⁺ + H ⁺)	923	
	Zn ²⁺	7.03							
	(ZnH ₃ L)	5.50	Pot			25	H ₂ O, I = 0.1 (ZnH ₂ L ⁴⁺ + H ⁺)	923	
Cy ₂ Carbon[3.2.2]-1	Na ⁺	5.50	ISE			25	MeOH (anion = Br)	928	
	K ⁺	2.01	ISE			25	MeOH (anion = Br)	928	
Cy ₂ Carbon[3.2.2]-2	Na ⁺	5.57	ISE			25	MeOH (anion = Br)	928	
	K ⁺	1.99	ISE			25	MeOH (anion = Br)	928	
Cy ₂ Carbon[3.2.2]-3	Na ⁺	6.60	ISE			25	MeOH (anion = Br)	928	
	K ⁺	3.74	ISE			25	MeOH (anion = Br)	928	
Cy ₂ Carbon[4.2.2]-1	Na ⁺	5.95	ISE			25	MeOH (anion = Br)	928	
	K ⁺	6.78	ISE			25	MeOH (anion = Cl)	928	
	Rb ⁺	4.89	ISE			25	MeOH (anion = Br)	928	
	Cs ⁺	3.56	ISE			25	MeOH (anion = Br)	928	
Cy ₂ Carbon[4.2.2]-2	Na ⁺	4.78	ISE			25	MeOH (anion = Br)	928	
	K ⁺	4.82	ISE			25	MeOH (anion = Cl)	928	
	Rb ⁺	2.73	ISE			25	MeOH (anion = Br)	928	
	Cs ⁺	2.80	ISE			25	MeOH (anion = Br)	928	
Cy ₂ Carbon[4.2.2]-3	Na ⁺	7.80	ISE			25	MeOH (anion = Br)	928	
	K ⁺	8.50	ISE			25	MeOH (anion = Cl)	928	
	Rb ⁺	6.88	ISE			25	MeOH (anion = Br)	928	
	Cs ⁺	4.77	ISE			25	MeOH (anion = Br)	928	
BCy ₂ Carbon[4.2.2]-1	Na ⁺	5.86	ISE			25	MeOH (anion = Br)	928, 929	
	K ⁺	6.50	ISE			25	MeOH (anion = Br)	928, 929	
	Rb ⁺	4.62	ISE			25	MeOH (anion = Cl)	928, 929	
	Cs ⁺	3.58	ISE			25	MeOH (anion = Cl)	929	
BCy ₂ Carbon[4.2.2]-2	Na ⁺	4.13	ISE			25	MeOH (anion = Br)	928, 929	
	K ⁺	4.65	ISE			25	MeOH (anion = Br)	928, 929	
	Rb ⁺	2.42	ISE			25	MeOH (anion = Cl)	928, 929	
	Cs ⁺	1.85	ISE			25	MeOH (anion = Cl)	929	
BCy ₂ Carbon[4.2.2]-3	Na ⁺	7.86	ISE			25	MeOH (anion = Br)	928, 929	
	K ⁺	8.18	ISE			25	MeOH (anion = Br)	928, 929	
	Rb ⁺	7.16	ISE			25	MeOH (anion = Cl)	928, 929	
	Cs ⁺	5.01	ISE			25	MeOH (anion = Cl)	929	
CHART LXXIV									
B ₂ Carbon[3.2.2]-1	Na ⁺	6.08	ISE			25	MeOH (anion = Cl)	928	
	K ⁺	3.17	ISE			25	MeOH (anion = Br)	928	
	K ⁺	3.60							
	(K ₂ L)	7.61	ISE			25	MeOH (anion = Br)	928	
B ₂ Carbon[4.2.2]-1	Na ⁺	7.61	ISE			25	MeOH (anion = Br)	928	
	K ⁺	7.48	ISE			25	MeOH (anion = Br)	928	
	Rb ⁺	6.21	ISE			25	MeOH (anion = Br)	928	
	Cs ⁺	4.64	ISE			25	MeOH (anion = Br)	928	
B ₃ Carbon[4.2.2]-1	Na ⁺	7.72	ISE			25	MeOH (anion = Cl)	928	
	K ⁺	8.75	ISE			25	MeOH (anion = Cl)	928	
	Rb ⁺	5.69	ISE			25	MeOH (anion = Cl)	928	
	Cs ⁺	4.25	ISE			25	MeOH (anion = Br)	928	
Carbon[4.3.1]-1	Na ⁺	3.33	ISE			25	MeOH	210	
	K ⁺	2.98	ISE			25	MeOH	210	
Carbon[4.4.1]-1	Na ⁺	2.57	ISE			25	MeOH	210	
	K ⁺	2.44	ISE			25	MeOH	210	
Carbon[4.4.1]-2	Na ⁺	3.40	ISE			25	MeOH	210	
	K ⁺	3.14	ISE			25	MeOH	210	
Carbon[5.4.1]-1	Na ⁺	2.84	ISE			25	MeOH	210	
	K ⁺	3.66	ISE			25	MeOH	210	
B(1,2,4-B) ₂ [5.5.2]-1	cation-18 ^f	>5.95	Spec			25?	Me ₂ CO (anion = PF ₆ ⁻)	930	
B(1,2,4-B) ₂ [5.5.2]-2	cation-18 ^f	5.43	Spec			25?	Me ₂ CO	931	
[1.1/1.1]-1	H ⁺	10.17(1)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	H ⁺	8.41(2)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	H ⁺	6.73(3)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	H ⁺	4.06(4)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	Co ²⁺	5.61	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	Co ²⁺	-3.78	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(CoLOH)	13.93	Pot			25	(Co ²⁺ + L + H ₂ O)	145	
	Cu ²⁺	13.93	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(Cu ₂ L)	13.93	Spec			25	(2Cu ²⁺ + L)	145	
	Cu ²⁺	0.14	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(Cu ₂ (OH) ₂ L)	0.16	Spec			25	(2Cu ²⁺ + L + 2H ₂ O)	145	
	Cu ²⁺	7.16	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(Cu ₂ (OH) ₂ L)	6.46	Spec			25	(2Cu ²⁺ + L + 2H ₂ O)	145	
	Cu ²⁺	16.29	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(AgHL)	13.54	Pot			25	(Ag ⁺ + L + H ⁺)	145	
	Ag ⁺	13.54	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(Ag ₂ L)	9.33	Pot			25	(2Ag ⁺ + L)	145	
	Zn ²⁺	9.33	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	(Zn ₂ L)						(2Zn ²⁺ + L)	145	

TABLE I (Continued)

ligand	cation	log <i>K</i> ^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^c	ref	
	Zn ²⁺	-6.34 (Zn ₂ (OH) ₂ L)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (2Zn ²⁺ + L + 2H ₂ O)	145	
	Cd ²⁺	8.84	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	Cd ²⁺	15.43 (CdHL)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (Cd ²⁺ + L + H ⁺)	145	
	Pb ²⁺	10.57	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	Pb ²⁺	11.3	Spec			25	H ₂ O, 0.1 M Et ₄ NClO ₄	145	
	Pb ²⁺	17.31 (PbHL)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (Pb ²⁺ + L + H ⁺)	145	
	Pb ²⁺	17.2 (PbHL)	Spec			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (Pb ²⁺ + L + H ⁺)	145	
	Pb ²⁺	2.19 (PbLOH)	Pot			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (Pb ²⁺ + L + H ₂ O)	145	
	Pb ²⁺	4.1 (PbLOH)	Spec			25	H ₂ O, 0.1 M Et ₄ NClO ₄ (Pb ²⁺ + L + H ₂ O)	145	
T ₄ [1.1/1.1]·1	H ⁺	8.53(1)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	186	
	H ⁺	7.87(2)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	186	
	H ⁺	5.61(3)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	186	
	H ⁺	4.86(4)	Pot			25	H ₂ O, 0.01 M Me ₄ NBr	186	
	Cu ²⁺	18.47 (Cu ₂ L)	Pot			25	H ₂ O, 0.01 M NaClO ₄ (2Cu ²⁺ + L)	186	
	Cu ²⁺	18.45 (Cu ₂ L)	Spec			25	H ₂ O, 0.01 M NaClO ₄ (2Cu ²⁺ + L)	186	
	Cu ²⁺	4.83 (Cu ₂ (OH) ₂ L)	Pot			25	H ₂ O, 0.01 M NaClO ₄ (2Cu ²⁺ + L + 2H ₂ O)	186	
	Cu ²⁺	4.37 (Cu ₂ (OH) ₂ L)	Spec			25	H ₂ O, 0.01 M NaClO ₄ (2Cu ²⁺ + L + 2H ₂ O)	186	
	Ag ⁺	13.12	Pot			25	H ₂ O, 0.01 M NaClO ₄	186	
	Ag ⁺	9.90 (Ag ₂ L)	Pot			25	H ₂ O, 0.01 M NaClO ₄	186	
(1,2-B) ₂ [2.2/2.2]·1	Hg ²⁺	>35.3 (Hg ₂ L)	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄ (2Hg ²⁺ + L)	700	
(1,4-B) ₂ [2.2/2.2]·1	Hg ²⁺	>32.0 (Hg ₂ L)	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄ (2Hg ²⁺ + L)	700	
	NH ₄ ⁺	3.46	Polg			25	DMF, 0.1 M Hex ₄ NClO ₄	701	
	NH ₄ ⁺	3.60	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₂ NH ₃ ⁺	>6.0	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	>6.0	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	>6.0	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	3.08	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₁₀ NH ₃ ⁺	3.00	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
(B·B) ₂ [2.2/2.2]·1	Hg ²⁺	>34.0 (Hg ₂ L)	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄ (2Hg ²⁺ + L)	700	
(BOB) ₂ [2.2/2.2]·1	Hg ²⁺	>36.0	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	700	
	NH ₄ ⁺	8.60	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₂ NH ₃ ⁺	3.74	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	3.60	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	4.11	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	3.85	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
	+H ₃ N(CH ₂) ₁₀ NH ₃ ⁺	3.78	Polg			25	67% PC-DCE, 0.1 M Hex ₄ NClO ₄	701	
(Nap·Nap)[2.2/2.2]·1	Na ⁺	3.4	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	K ⁺	4.7	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	K ⁺	3.1 (K ₂ L)	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	Rb ⁺	3.8	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	Rb ⁺	2.2 (Rb ₂ L)	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	Cs ⁺	4.0	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
	Cs ⁺	2.0 (Cs ₂ L)	ISE			25	MeOH·H ₂ O (95:1/v/v), 0.1 M Et ₄ NBr	932	
CHART LXXV									
[B ₂ 3.3/B ₂ (1,4-B) ₄ 2.2]·1	Ph(CH ₂) ₃ NH ₃ ⁺	2.52	NMR			20	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₃ NH ₃ ⁺	2.43	NMR			40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₃ NH ₃ ⁺	2.34	NMR			60	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₃ NH ₃ ⁺		NMR	·8	22	20-40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₄ NH ₃ ⁺	2.64	NMR			20	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₄ NH ₃ ⁺	2.57	NMR			40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₄ NH ₃ ⁺	2.45	NMR			60	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₄ NH ₃ ⁺		NMR	·11	15	20-60	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₅ NH ₃ ⁺	3.24	NMR			20	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	
	Ph(CH ₂) ₅ NH ₃ ⁺	2.94	NMR			40	CDCl ₃ /MeOD- <i>d</i> ₃ (4:1/v/v), (anion = picrate)	668, 818	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Ph(CH ₂) ₅ NH ₃ ⁺	2.66	NMR			60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₅ NH ₃ ⁺		NMR	-28	-32	20-60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₆ NH ₃ ⁺	3.23	NMR			20	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₆ NH ₃ ⁺	2.91	NMR			40	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₆ NH ₃ ⁺	2.62	NMR			60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₆ NH ₃ ⁺		NMR	-29	-37	20-60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₇ NH ₃ ⁺	2.79	NMR			20	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₇ NH ₃ ⁺	2.67	NMR			40	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₇ NH ₃ ⁺	2.48	NMR			60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₇ NH ₃ ⁺		NMR	-18	-5	20-60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₈ NH ₃ ⁺	2.70	NMR			20	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₈ NH ₃ ⁺	2.61	NMR			40	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₈ NH ₃ ⁺	2.48	NMR			60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₈ NH ₃ ⁺		NMR	-10	19	20-60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₉ NH ₃ ⁺	2.41	NMR			20	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₉ NH ₃ ⁺	2.32	NMR			40	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₉ NH ₃ ⁺	2.20	NMR			60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
	Ph(CH ₂) ₉ NH ₃ ⁺		NMR	-9	16	20-60	CDCl ₃ /MeOD-d ₃ (4:1/v:v), (anion = picrate)	668, 818
[3.3.1.1]-1	H ⁺	21.1(1+2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	5.3(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	2.0(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Na ⁺	1.6	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	K ⁺	3.42	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921,933,934
	Rb ⁺	4.22	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921,933,934
	Cs ⁺	3.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933, 934
	Ca ²⁺	4.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Sr ²⁺	6.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Ba ²⁺	8.2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	NH ₄ ⁺	6.1	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921
[3.3.1.C ₆]-1	H ⁺	10.9(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	9.65(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	5.23(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	2.0(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Na ⁺	1.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	K ⁺	2.52	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921, 933
	Rb ⁺	3.32	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921, 933
	Cs ⁺	2.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Ca ²⁺	2.4	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Sr ²⁺	2.8	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Ba ²⁺	5.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	NH ₄ ⁺	4.3	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	921
[3.3.1.C ₆]-1	H ⁺	10.4(1)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	8.3(2)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	6.1(3)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	H ⁺	4.1(4)	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	K ⁺	<2.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Rb ⁺	<2.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Cs ⁺	<2.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Ca ²⁺	<2.0	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Sr ²⁺	~2	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Ba ²⁺	3.7	Pot			25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
[1.1.C ₆ .C ₆](A ₃ 18C6)-1	K ⁺	2.29	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.1	935
	K ⁺	2.46	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.4	935
	tyramine ⁺	2.16	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.1	935
	6-NH ₃ ⁺ C ₆ H ₁₃ OH	1.68	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.1	935
	6-NH ₃ ⁺ (CH ₂) ₆ COOH	2.37	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.4	935
	4-NH ₃ ⁺ (CH ₂) ₃ COOH	2.40	K ⁺ ISE			25	MeOH-H ₂ O (9:1/v:v) pH 9.4	935
CHART LXXXVI								
Bridged Calix-1	Li ⁺	4.58	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	5.04	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	K ⁺	8.48	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	K ⁺	8.29	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	Rb ⁺	8.04	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Bridged Calix-2	Rb ⁺	7.78	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	Cs ⁺	5.67	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	Li ⁺	<4	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	4.63	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	K ⁺	6.08	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
Bridged Calix-3	Rb ⁺	4.77	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	Cs ⁺	<4	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757, 936
	Na ⁺	4.94	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	7.11	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	6.30	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-4	Cs ⁺	5.20	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Li ⁺	4.74	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	4.62	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺	5.18	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Rb ⁺	5.32	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
Bridged Calix-5	Cs ⁺	6.51	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	5.11	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	7.08	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	5.60	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Cs ⁺	4.99	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-6	Na ⁺	5.88	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	9.95	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	9.18	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Cs ⁺	6.20	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Na ⁺	5.46	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-7	K ⁺	8.15	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	7.73	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Cs ⁺	5.97	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Na ⁺	5.08	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	6.74	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-8	Rb ⁺	5.75	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Cs ⁺	5.26	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Na ⁺	6.28	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	8.72	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	7.28	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-9	Cs ⁺	5.92	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Na ⁺	5.43	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	K ⁺	9.23	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Rb ⁺	8.30	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
	Cs ⁺	5.48	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	936
Bridged Calix-11	Na ⁺	12.32	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	9.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	K ⁺	13.34	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
Bridged Calix-12	K ⁺	10.27	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	Rb ⁺	9.56	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Rb ⁺	8.80	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	Cs ⁺	7.19	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	937
	Li ⁺	5.32	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺	6.49	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺	8.91	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Rb ⁺	8.79	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
Bridged Spher-1	Cs ⁺	6.26	Solv Extr-UV (Pic Anal)			22	H ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Li ⁺	4.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Na ⁺	6.51	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	K ⁺	7.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Rb ⁺	6.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Cs ⁺	5.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	NH ₄ ⁺	6.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	CH ₃ NH ₃ ⁺	4.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
Bridged Spher-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	5.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	5.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺	9.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺	9.32	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	K ⁺	10.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Rb ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Cs ⁺	7.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
Bridged Spher-3	NH ₄ ⁺	8.11	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	CH ₃ NH ₃ ⁺	7.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	5.51	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Na ⁺	9.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	K ⁺	9.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Rb ⁺	8.34	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Cs ⁺	6.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
Bridged Spher-4	NH ₄ ⁺	7.54	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	CH ₃ NH ₃ ⁺	6.53	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.45	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	4.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Na ⁺	7.56	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	K ⁺	6.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Rb ⁺	4.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Cs ⁺	4.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
Bridged Spher-5	NH ₄ ⁺	4.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	CH ₃ NH ₃ ⁺	3.60	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~2.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502
	Li ⁺	4.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K.mol	T, °C	conditions ^c	ref	
Bridged Spher-6	Na ⁺	6.40	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	K ⁺	6.66	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Rb ⁺	4.98	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Cs ⁺	4.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	NH ₄ ⁺	4.88	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	CH ₃ NH ₃ ⁺	3.38	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	~2.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Li ⁺	6.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Na ⁺	9.52	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	K ⁺	8.93	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Rb ⁺	7.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Cs ⁺	5.85	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	NH ₄ ⁺	6.74	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	CH ₃ NH ₃ ⁺	6.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502		
Bridged Spher-7	Li ⁺	7.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Na ⁺	10.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	K ⁺	10.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Rb ⁺	9.36	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Cs ⁺	8.28	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	NH ₄ ⁺	9.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	CH ₃ NH ₃ ⁺	8.70	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	<i>t</i> -C ₄ H ₉ NH ₄ ⁺	8.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	502	
	Bridged Spher-8	Li ⁺	12.30	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
		Na ⁺	9.99	Solv Extr-UV (Pic Anal)			25	H ₂ O (anion = picrate)	494
Na ⁺		9.74	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494	
Na ⁺		9.73	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493	
Na ⁺		av 11.99	NMR			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494	
Na ⁺		9.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
Na ⁺		9.88	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	494	
Bridged Spher-9		Na ⁺	13.73	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493
	Li ⁺	11.65	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493	
	Li ⁺	11.64	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494	
	Na ⁺	10.04	Solv Extr-UV (Pic Anal)			25	H ₂ O (anion = picrate)	494	
	Na ⁺	13.73	Kin			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	494	
	Na ⁺	9.95	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	494	
Bridged Spher-10	Li ⁺	7.40	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	
	Na ⁺	9.77	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	
	K ⁺	9.15	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	
	Rb ⁺	7.78	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	
	Cs ⁺	6.15	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	
	NH ₄ ⁺	7.32	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497	

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TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
Bridged Spher-11	CH ₃ NH ₃ ⁺	5.83	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.88	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	8.79	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	10.80	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	9.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	8.08	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	6.72	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	8.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Bridged Spher-12	CH ₃ NH ₃ ⁺	7.53	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	7.99	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	10.85	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	9.60	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	7.84	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	6.52	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	7.68	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Bridged Spher-13	CH ₃ NH ₃ ⁺	6.23	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.83	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	8.64	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	8.04	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	10.20	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	9.97	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	8.93	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	8.92	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Bridged Spher-14	CH ₃ NH ₃ ⁺	8.36	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	6.71	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	8.56	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Na ⁺	8.34	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	K ⁺	9.48	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Rb ⁺	9.77	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Cs ⁺	9.88	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	NH ₄ ⁺	8.73	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
Bridged Spher-15	CH ₃ NH ₃ ⁺	8.30	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	<i>t</i> -C ₄ H ₉ NH ₃	7.08	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	497
	Li ⁺	9.96	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Na ⁺	12.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	K ⁺	11.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Rb ⁺	10.84	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Cs ⁺	10.62	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	NH ₄ ⁺	11.15	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
Bridged Spher-16	CH ₃ NH ₃ ⁺	10.26	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	9.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	4-(<i>t</i> -C ₄ H ₉)PhN ₂ ⁺	4.32	Spec			25	DCE (anion = BF ₄ ⁻)	593
	Li ⁺	9.08	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Na ⁺	9.30	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	K ⁺	9.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Rb ⁺	8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Cs ⁺	8.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	NH ₄ ⁺	8.79	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	CH ₃ NH ₃ ⁺	8.20	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
Bridged Spher-17								
	Li ⁺	11.83	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Na ⁺	11.72	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	K ⁺	12.00	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Rb ⁺	11.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Cs ⁺	11.57	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	NH ₄ ⁺	11.49	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	CH ₃ NH ₃ ⁺	10.91	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	10.48	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
Bridged Spher-18								
	Li ⁺	8.86	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Na ⁺	10.04	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	K ⁺	10.18	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Rb ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	Cs ⁺	7.69	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	NH ₄ ⁺	9.23	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	CH ₃ NH ₃ ⁺	8.64	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	7.76	Solv Extr-UV (Pic Anal)			25	D ₂ O sat'd CDCl ₃ (anion = picrate)	938
Basket-1								
	Li ⁺	5.58	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Na ⁺	5.81	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	K ⁺	5.20	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Rb ⁺	4.83	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Cs ⁺	4.83	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	NH ₄ ⁺	4.43	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	CH ₃ NH ₃ ⁺	4.62	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	<<3.62	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
Basket-2								
	Li ⁺	4.89	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Na ⁺	6.58	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	K ⁺	8.62	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Rb ⁺	7.38	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Cs ⁺	6.80	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	NH ₄ ⁺	6.98	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	CH ₃ NH ₃ ⁺	5.96	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.11	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₃ NH ₃ ⁺	7.00	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	8.28	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₅ NH ₃ ⁺	9.26	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	9.79	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T , °C	conditions ^c	ref
	+H ₃ N(CH ₂) ₇ NH ₃ ⁺	9.78	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	9.79	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₉ NH ₃ ⁺	9.89	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,4-(CH ₂ NH ₃ ⁺) ₂]Ph	9.38	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	9.32	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,4-(NH ₃ ⁺) ₂]Ph	8.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,2-(NH ₃ ⁺) ₂]Ph	9.00	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
Basket-3	Li ⁺	4.87	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Na ⁺	5.72	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	K ⁺	6.97	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Rb ⁺	6.53	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	Cs ⁺	6.56	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	NH ₄ ⁺	6.46	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	CH ₃ NH ₃ ⁺	5.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.04	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₂ NH ₃ ⁺	6.30	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	7.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₅ NH ₃ ⁺	7.48	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	8.43	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₇ NH ₃ ⁺	9.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	10.05	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	+H ₃ N(CH ₂) ₉ NH ₃ ⁺	10.05	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,4-(CH ₂ NH ₃ ⁺) ₂]Ph	8.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	8.04	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,4-(NH ₃ ⁺) ₂]Ph	7.78	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
	[1,2-(NH ₃ ⁺) ₂]Ph	8.76	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	939
				CHART LXXVIII				
Basket-4	Li ⁺	6.15	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Na ⁺	6.20	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	K ⁺	6.20	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Rb ⁺	6.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Cs ⁺	6.30	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	NH ₄ ⁺	7.57	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	CH ₃ NH ₃ ⁺	6.00	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	5.08	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	+H ₃ N(CH ₂) ₂ NH ₃ ⁺	8.92	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	9.28	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	8.70	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	8.81	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	+H ₃ N(CH ₂) ₇ NH ₃ ⁺	8.77	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	$^+H_2N(CH_2)_6NH_3^+$	8.81	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_6NH_3^+$	8.81	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(CH ₂ NH ₃ ⁺)]	10.41	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	10.08	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(NH ₃ ⁺) ₂]Ph	7.82	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,2-(NH ₃ ⁺) ₂]Ph	12.54	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
Basket-5	Li ⁺	5.58	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Na ⁺	5.92	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	K ⁺	6.28	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Rb ⁺	5.99	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Cs ⁺	6.15	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	NH ₄ ⁺	6.58	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	CH ₃ NH ₃ ⁺	5.43	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_3NH_3^+$	8.18	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_4NH_3^+$	8.53	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_5NH_3^+$	8.11	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_6NH_3^+$	8.32	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_7NH_3^+$	8.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_8NH_3^+$	8.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_9NH_3^+$	8.45	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(CH ₂ NH ₃ ⁺) ₂]Ph	9.26	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	9.00	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(NH ₃ ⁺) ₂]Ph	10.15	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,2-(NH ₃ ⁺) ₂]Ph	12.11	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
Basket-6	Li ⁺	5.79	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Na ⁺	6.15	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	K ⁺	6.51	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Rb ⁺	6.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	Cs ⁺	6.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	NH ₄ ⁺	6.98	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	CH ₃ NH ₃ ⁺	5.53	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.30	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_3NH_3^+$	8.28	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_4NH_3^+$	8.68	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_5NH_3^+$	8.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_6NH_3^+$	8.45	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_7NH_3^+$	8.40	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_8NH_3^+$	8.57	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	$^+H_3N(CH_2)_9NH_3^+$	8.60	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(CH ₂ NH ₃ ⁺) ₂]Ph	9.52	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	9.32	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,4-(NH ₃ ⁺) ₂]Ph	9.72	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940
	[1,2-(NH ₃ ⁺) ₂]Ph	11.74	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref	
Basket-7	Li ⁺	5.75	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	Na ⁺	6.23	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	K ⁺	6.26	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	Rb ⁺	6.08	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	Cs ⁺	6.34	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	NH ₄ ⁺	6.95	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	CH ₃ NH ₃ ⁺	5.56	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	4.43	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₃ NH ₃ ⁺	8.41	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₄ NH ₃ ⁺	8.78	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₅ NH ₃ ⁺	8.15	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₆ NH ₃ ⁺	8.40	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₇ NH ₃ ⁺	8.36	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₈ NH ₃ ⁺	8.45	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	+H ₃ N(CH ₂) ₉ NH ₃ ⁺	8.53	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	[1,4-(CH ₂ NH ₃ ⁺) ₂]Ph	9.54	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	[1,3-(CH ₂ NH ₃ ⁺) ₂]Ph	9.23	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	[1,4-(NH ₃ ⁺) ₂]Ph	9.68	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
	[1,2-(NH ₃ ⁺) ₂]Ph	13.34	Solv Extr-UV (Pic Anal)			25	H ₂ O sat'd CHCl ₃ (anion = picrate)	940	
Azacyclophane-2	Li ⁺	3.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	941	
	Na ⁺	3.8	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	941	
	K ⁺	4.5	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	941	
	Cs ⁺	5.3	Solv Extr-UV (Pic Anal)			25	CDCl ₃ (anion = picrate)	941	
CHART LXXIX									
Cyclic Thiourea-1	Ag ⁺	9.9(1)	ISE			25	H ₂ O (Ag ⁺ coordinates only to S atoms)	942	
	Ag ⁺	4.6(2)	ISE			25	H ₂ O (Ag ⁺ coordinates only to S atoms)	942	
Ferrocene-1	Mg ²⁺	6.2(1+2)	Spec			30	MeCN	943	
	Ca ²⁺	7.0(1+2)	Spec			30	MeCN	943	
	Sr ²⁺	5.8(1+2)	Spec			30	MeCN	943	
Ferrocene-2	Be ²⁺	5.9(1+2)	Spec			30	MeCN	943	
	Mg ²⁺	6.6(1+2)	Spec			30	MeCN	943	
	Ca ²⁺	6.5(1+2)	Spec			30	MeCN	943	
Ferrocene-3	Ba ²⁺	6.0(1+2)	Spec			30	MeCN	943	
	Mg ²⁺	5.9(1+2)	Spec			30	MeCN·CHCl ₃ (1:1)	943	
	Ca ²⁺	6.9(1+2)	Spec			30	MeCN·CHCl ₃ (1:1)	943	
	Sr ²⁺	6.4(1+2)	Spec			30	MeCN·CHCl ₃ (1:1)	943	
Ferrocene-4	Ba ²⁺	6.7(1+2)	Spec			30	MeCN·CHCl ₃ (1:1)	943	
	Be ²⁺	none	Spec			30	MeCN	943	
	Mg ²⁺	none	Spec			30	MeCN	943	
	Ca ²⁺	none	Spec			30	MeCN	943	
Ferrocene-5	Sr ²⁺	none	Spec			30	MeCN	943	
	Ba ²⁺	none	Spec			30	MeCN	943	
	Be ²⁺	4.10	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Be ²⁺	4.1	Spec			30	MeCN (anion = ClO ₄ ⁻)	943	
	Mg ²⁺	3.58	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Mg ²⁺	3.5	Spec			30	MeCN (anion = ClO ₄ ⁻)	943	
	Ca ²⁺	4.13	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Ca ²⁺	4.2	Spec			30	MeCN (anion = ClO ₄ ⁻)	943	
	Sr ²⁺	4.24	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Sr ²⁺	4.2	Spec			30	MeCN (anion = ClO ₄ ⁻)	943	
	Ba ²⁺	4.42	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Ba ²⁺	4.5	Spec			30	MeCN (anion = ClO ₄ ⁻)	943	
	Dy ³⁺	4.51	Spec			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
Dy ³⁺	4.5(1)	Spec			30	MeCN (anion = ClO ₄ ⁻)	943		
Dy ³⁺	3.0(2)	Spec			30	MeCN (anion = ClO ₄ ⁻)	943		
Ferrocene ⁺ -6	Be ²⁺	-0.89	Calc'd			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Mg ²⁺	0.79	Calc'd			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Ca ²⁺	1.51	Calc'd			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Sr ²⁺	1.96	Calc'd			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	
	Ba ²⁺	2.65	Calc'd			25	MeCN, 0.1 M Bu ₄ NClO ₄	944	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
Amphotericin B	Dy ³⁺	0.21	Calc ^d			25	MeCN, 0.1 M Bu ₄ NClO ₄	944
	H ⁺	8.52(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	H ⁺	3.70(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.90(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.15(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.33(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.81(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.83(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.51(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	6.09(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.86(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	4.78(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	3.94(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	5.17(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	4.46(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Antamanide	Li ⁺	2.11	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)
Li ⁺		<1.00	Spec			25?	MeOH (anion = Cl ⁻)	946
Na ⁺		none	ISE			25?	EtOH·H ₂ O (30:70), (anion = Br)	946
Na ⁺		3.11	ORD			25	95% EtOH	947
Na ⁺		3.30	ISE/OSM			25?	EtOH·H ₂ O (96:4), (anion = Br)	946
Na ⁺		3.30	ISE			25	EtOH	947
Na ⁺		3.45	Cond			25	EtOH (absolute)	947
Na ⁺		3.42	OSM			25?	MeCN·H ₂ O (96:4), (anion = ClO ₄ ⁻)	946
Na ⁺		3.08	OSM/Spec			25?	MeCN·H ₂ O (92:8), (anion = ClO ₄ ⁻)	946
Na ⁺		4.48	OSM/Spec			25?	MeCN (anion = ClO ₄ ⁻)	946
Na ⁺		2.70	OSM/Spec			25?	MeOH (anion = ClO ₄ ⁻)	946
K ⁺		nm	ORD			25	95% EtOH	947
K ⁺		2.26	ISE/OSM			25?	EtOH·H ₂ O (96:4), (anion = Br)	946
K ⁺		2.27	ISE			25	EtOH	947
K ⁺		2.43	Cond			25	EtOH (absolute)	947
K ⁺		1.30	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)	946
K ⁺		2.45	OSM			25?	MeCN·H ₂ O (92:8), (anion = SCN ⁻)	946
K ⁺		2.46	OSM			25?	MeCN (anion = SCN ⁻)	946
K ⁺		1.00	Spec			25?	MeOH (anion = Br)	946
Ca ²⁺		5.00	Spec			25?	MeCN (anion = ClO ₄ ⁻)	946
Ca ²⁺		1.48	Spec			25?	MeOH (anion = Cl ⁻)	946
Tl ⁺		2.28	OSM			25?	MeOH (anion = NO ₃ ⁻)	948
Abu ¹ -Antamanide		Na ⁺	3.00-3.30	Spec			25?	EtOH·H ₂ O (96:4)
Ala ¹ -Antamanide ^e	Na ⁺	2.18	Spec			25?	EtOH·H ₂ O (96:4)	946
Ala ¹ ,Gly ⁴ -Antamanide ^e	Na ⁺	2.08	Spec			25?	EtOH·H ₂ O (96:4)	946
(Br ₂)Tyr ⁶ -Antamanide ^e	Na ⁺	3.54	Spec			25?	EtOH·H ₂ O (96:4)	946
(des-Pro ⁸)-Antamanide ^e	Na ⁺	<1.00	Spec			25?	EtOH·H ₂ O (96:4)	946
Gly ¹ -Antamanide ^e	Na ⁺	2.26	Spec			25?	EtOH·H ₂ O (96:4)	948
Gly ⁷ -Antamanide ^e	Na ⁺	1.78	Spec			25?	EtOH·H ₂ O (96:4)	946
Gly ¹ ,Gly ⁴ -Antamanide ^e	Li ⁺	2.30	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)	946
	Na ⁺	2.00	Spec			25?	EtOH·H ₂ O (96:4)	946
	Na ⁺	2.40	OSM			25?	MeCN·H ₂ O (96:4), (anion = ClO ₄ ⁻)	946
	Na ⁺	3.28	OSM			25?	MeCN (anion = ClO ₄ ⁻)	946
	Na ⁺	1.60	OSM			25?	MeOH (anion = ClO ₄ ⁻)	948
	K ⁺	1.85	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)	946
Ile ¹ -Antamanide ^e	Na ⁺	3.36	Spec			25?	EtOH·H ₂ O (96:4)	946
Leu ¹ -Antamanide ^e	Na ⁺	3.00	Spec			25?	EtOH·H ₂ O (96:4)	946
(O-dodecyl)-Tyr ⁶ - Antamanide ^e	Na ⁺	<1.00	Spec			25?	EtOH·H ₂ O (96:4)	946
(O-glucosido)-Tyr ⁶ - Antamanide ^e	Na ⁺	3.23	Spec			25?	EtOH·H ₂ O (96:4)	946
Perhydro-Antamanide	Li ⁺	2.58	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)	946
	Na ⁺	4.18	OSM			25?	MeCN (anion = ClO ₄ ⁻)	946
	Na ⁺	3.56	OSM			25?	MeCN·H ₂ O (96:4), (anion = ClO ₄ ⁻)	946
	Na ⁺	2.70	OSM			25?	MeOH (anion = ClO ₄ ⁻)	946
	K ⁺	2.36	OSM			25?	MeCN·H ₂ O (96:4), (anion = Br)	946
Pro ⁶ ,Phe ⁷ -Antamanide ^e	Na ⁺	1.70	Spec			25?	EtOH·H ₂ O (96:4)	946
Tyr ⁶ -Antamanide ^e	Na ⁺	3.30	Spec			25?	EtOH·H ₂ O (96:4)	946
Beauvericin	Li ⁺	2.00	Cond			25	EtOH	948
	Na ⁺	2.48	Cond			25	EtOH	948
	K ⁺	3.49	Cond			25	EtOH	948
	Rb ⁺	3.54	Cond			25	EtOH	948
	Cs ⁺	3.54	Cond			25	EtOH	948
Dinactin	Li ⁺	<0.3	Spec			25	MeOH, (anion = Cl ⁻)	949
	Na ⁺	4.4	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS_f , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺	3.04	Spec	-27.6		25	MeOH, (anion = Cl ⁻)	949
	Na ⁺	3.04	TJ			25	MeOH, 0.1 M Bu ₄ NClO ₄	949
	K ⁺	5.24	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950, 951
	K ⁺	>3.70	NMR			25	MeOH·CDCl ₃ (8:2/v:v)	952
	K ⁺	4.63	Spec			25	MeOH, (anion = Cl ⁻)	949
	Rb ⁺	4.62	Spec			25	MeOH, (anion = Cl ⁻)	949
	Cs ⁺	3.62	Spec			25	MeOH, (anion = Cl ⁻)	949
	NH ₄ ⁺	4.96	Spec			25	MeOH, (anion = Cl ⁻)	949
Enniatin A	Na ⁺	3.46	CD			25	EtOH	953
	K ⁺	3.99	CD			25	EtOH	953
"Enniatin A"	Na ⁺	none	Cond			25	EtOH	954
	K ⁺	none	Cond			25	EtOH	954
	K ⁺	3.08	Pot			20	MeOH (anion = I ⁻)	955
Enniatin B	Na ⁺	3.42	CD			25	EtOH	953
	Na ⁺	3.11	Cond			25	EtOH	954
	Na ⁺	2.38	Pot			20	MeOH (anion = I ⁻)	955
	K ⁺	3.81	CD			25	EtOH	953
	K ⁺	3.57	Cond			25	EtOH	954
	K ⁺	2.92	Pot			20	MeOH (anion = I ⁻)	955
	Rb ⁺	3.60	Cond			25	EtOH	954
	Cs ⁺	3.34	Cond			25	EtOH	954
(Tri-N-desmethyl)- Enniatin B	Na ⁺	3.40	CD			25	EtOH	953
	K ⁺	3.42	CD			25	EtOH	953
Enniatin C	Na ⁺	3.40	CD			25	EtOH	953
	Na ⁺	3.40	Cond			25	EtOH	954
	K ⁺	3.74	CD			25	EtOH	953
	K ⁺	3.74	Cond			25	EtOH	954
	Rb ⁺	3.88	Cond			25	EtOH	954
	Cs ⁺	3.61	Cond			25	EtOH	954
Enantio-eniatiin A	Na ⁺	3.46	CD			25	EtOH	953
	K ⁺	3.99	CD			25	EtOH	953
Enantio-eniatiin B	Na ⁺	3.42	CD			25	EtOH	953
	Na ⁺	3.11	Cond			25	EtOH	954
	K ⁺	3.81	CD			25	EtOH	953
	K ⁺	3.57	Cond			25	EtOH	954
	Rb ⁺	3.60	Cond			25	EtOH	954
	Cs ⁺	3.34	Cond			25	EtOH	954
Enantio-eniatiin C	Na ⁺	3.40	CD			25	EtOH	953
	K ⁺	3.74	CD			25	EtOH	953
Enantio-valinomycin	K ⁺	6.30	Cond			25	EtOH	953
Monactin	Li ⁺	<0.3	Spec			25	MeOH (anion = Cl ⁻)	949
	Na ⁺	4.3	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950
	Na ⁺	2.60	Spec	-25.1		25	MeOH (anion = Cl ⁻)	949
	Na ⁺	2.70	TJ			25	MeOH, 0.1 M Bu ₄ NClO ₄	949
	Na ⁺	3.04	Spec			30	MeOH (anion = SCN ⁻)	956
	K ⁺	4.78	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950, 951
	K ⁺	>3.70	NMR			25	MeOH·CDCl ₃ (8:2/v:v)	952
	K ⁺	4.38	Spec			25	MeOH, (anion = Cl ⁻)	949
	K ⁺	5.40	Spec			30	MeOH (anion = SCN ⁻)	956
	Rb ⁺	4.38	Spec			25	MeOH, (anion = Cl ⁻)	949
	Cs ⁺	3.30	Spec			25	MeOH, (anion = Cl ⁻)	949
	NH ₄ ⁺	4.68	Spec			25	MeOH, (anion = Cl ⁻)	949
Nonactin	Li ⁺	<0.3	Spec			25	MeOH (anion = Cl ⁻)	949
	Na ⁺	4.0	Polg	~20.9		22	MeCN, 0.025 M Bu ₄ NClO ₄	950
	Na ⁺	2.36	Spec			25	MeOH (anion = Cl ⁻)	949
	Na ⁺	2.11	Spec			30	MeOH (anion = SCN ⁻)	956
	K ⁺	4.43	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950, 951
	K ⁺	>3.70	NMR			25	MeOH·CDCl ₃ (8:2/v:v)	952
	K ⁺	3.59	Pot			20	MeOH (anion = SCN ⁻)	955
	K ⁺	4.15	Spec			25	MeOH (anion = Cl ⁻)	949
	K ⁺	3.70	Spec			30	MeOH (anion = SCN ⁻)	956
	Rb ⁺	3.9	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950
	Rb ⁺	4.15	Spec			25	MeOH (anion = Cl ⁻)	949
	Cs ⁺	2.6	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950
	Cs ⁺	3.18	Spec			25	MeOH (anion = Cl ⁻)	949
	NH ₄ ⁺	4.38	Spec			25	MeOH (anion = Cl ⁻)	949
Nystatin	H ⁺	8.22(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	H ⁺	4.14(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Mg ²⁺	2.87(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Mg ²⁺	1.58(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Ca ²⁺	3.54(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Ca ²⁺	3.39(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	5.33(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	3.18(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.41(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Ni ²⁺	4.02(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.39(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	4.85(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.88(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Cu ²⁺	5.16(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	3.64(1)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	3.43(2)	Pot			25	50% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	4.48(1)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
	Zn ²⁺	3.22(2)	Sol			25	1% DMF·H ₂ O, 3 M NaClO ₄	945
Tetranactin	Na ⁺	4.48	NMR			25	Me ₂ CO-d ₆ (anion = SCN ⁻)	957
	Na ⁺	4.30	Spec	-30.1		40	Me ₂ CO-d ₆	958
			Cal	-34.7	-28.0	40	Me ₂ CO-d ₆	958

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
	Na ⁺		Cal	-41.4		25	MeOH	959
	Na ⁺	2.70	IRSpec			25	MeOH (anion = SCN ⁻)	957
	Na ⁺	2.60	Spec	-41.51(Cal)	-88.7	25	MeOH	958
	K ⁺	5.00	NMR			25	Me ₂ CO·d ₆ (anion = SCN ⁻)	957
	K ⁺	4.89	Spec	-50.2(Cal)	-66.9	40	Me ₂ CO·d ₆	958
	K ⁺		Cal	-64.4		25	MeOH	959
	K ⁺	4.30	IRSpec			25	MeOH (anion = SCN ⁻)	957
	K ⁺	4.20	Spec	-64.48(Cal)	-136.0	25	MeOH	958
	Rb ⁺	4.48	NMR			25	Me ₂ CO·d ₆ (anion = SCN ⁻)	957
	Rb ⁺	4.36	Spec	-48.5(Cal)	-71.1	40	Me ₂ CO·d ₆	958
	Rb ⁺		Cal	-51.9		25	MeOH	959
	Rb ⁺	4.00	IRSpec			25	MeOH (anion = SCN ⁻)	957
	Rb ⁺	3.90	Spec	-51.30(Cal)	-102.5	25	MeOH	958
	Cs ⁺	3.48	NMR			25	Me ₂ CO·d ₆ (anion = SCN ⁻)	957
	Cs ⁺	3.36	Spec	-32.2(Cal)	-38.9	40	Me ₂ CO·d ₆	958
	Cs ⁺		Cal	-48.1		25	MeOH	959
	Cs ⁺	3.48	IRSpec			25	MeOH (anion = SCN ⁻)	957
	Cs ⁺	3.38	Spec	-48.07(Cal)	-96.7	25	MeOH	958
	Ba ²⁺	1.61	Spec	-11.7	-6.69	40	Me ₂ CO·d ₆	958
	NH ₄ ⁺	3.65	Spec	-62.76(Cal)	-140.6	25	MeOH	958
Trinactin	Li ⁺	<0.3	Spec			25	MeOH (anion = Cl ⁻)	949
	Na ⁺	3.23	Spec	-30.5		25	MeOH (anion = Cl ⁻)	949
	Na ⁺	3.28	TJ			25	MeOH, 0.1 M Bu ₄ NClO ₄	949
	K ⁺	5.44	Polg			22	MeCN, 0.025 M Bu ₄ NClO ₄	950, 951
	K ⁺	>3.70	NMR			25	MeOH-CDCl ₃ (8:2/v:v)	952
	K ⁺	4.96	Spec			25	MeOH (anion = Cl ⁻)	949
	Rb ⁺	4.89	Spec			25	MeOH (anion = Cl ⁻)	949
	Cs ⁺	4.00	Spec			25	MeOH (anion = Cl ⁻)	949
Valinomycin	NH ₄ ⁺	5.32	Spec			25	MeOH (anion = Cl ⁻)	949
	Na ⁺	2.04	CD			25	n-BuOH (anion = Br ⁻)	960
	Na ⁺	>6	CD			25	C ₆ H ₁₂ (anion = trinitroresol ⁻)	960
	Na ⁺	>5	CD			25	CH ₂ Cl ₂ (anion = trinitroresol ⁻)	960
	Na ⁺	>5.5	CD			25	CHCl ₃ (anion = trinitroresol ⁻)	960
	Na ⁺	~3	CD			25	Diox (anion = trinitroresol ⁻)	960
	Na ⁺	1.40	CD			25	EtOH (anion = Br ⁻)	960
	Na ⁺	none	Cond			25	EtOH	954
	Na ⁺	2.6	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950, 961
	Na ⁺	<3	CD			25	MeCN (anion = Br ⁻)	960
	Na ⁺	<3	CD			25	Me ₂ CO (anion = Br ⁻)	960
	Na ⁺	1.08	Pot			20	MeOH (anion = I ⁻)	955
	Na ⁺	0.77	CD			25	MeOH (anion = Br ⁻)	960
	Na ⁺	0.67	Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	962
	Na ⁺	2.25	CD			25	i-PrOH (anion = Br ⁻)	960
	Na ⁺	<3	CD			25	Trifluoroethanol (anion = Br ⁻)	960
	K ⁺	>6	CD			25	n-BuOH (anion = Br ⁻)	960
	K ⁺	>6	CD			25	C ₆ H ₁₂ (anion = trinitroresol ⁻)	960
	K ⁺	>5	CD			25	CH ₂ Cl ₂ (anion = Br ⁻ or trinitroresol ⁻)	960
	K ⁺	>5.5	CD			25	CHCl ₃ (anion = Br ⁻ or trinitroresol ⁻)	960
	K ⁺	2.5	CD			25	63.2 wt% Diox·H ₂ O	960
	K ⁺	2.9	CD			25	76.5 wt% Diox·H ₂ O	960
	K ⁺	3.2	CD			25	88.5 wt% Diox·H ₂ O	960
	K ⁺	>4.7	CD			25	Diox (anion = trinitroresol ⁻)	960
	K ⁺	6.08	Cal	-37.2	-9.04	25	EtOH (anion = I ⁻)	963
	K ⁺	5.8	CD			25	EtOH (anion = Br ⁻)	960
	K ⁺	3.72	Cond			25	EtOH	954
	K ⁺	6.30	Cond			25	EtOH	953
	K ⁺	3.0	CD			25	76 wt% MeCN·H ₂ O	960
	K ⁺	6.7	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950, 961
	K ⁺	5.5	CD			25	MeCN (anion = Br ⁻)	960
	K ⁺	>3.7	CD			25	Me ₂ CO (anion = Br ⁻)	960
	K ⁺	3.34	CD			25	79.8 wt% MeOH·H ₂ O	960
	K ⁺	>3.70	NMR			25	MeOH-CDCl ₃ (8:2/v:v)	952
	K ⁺	>3.90	Pot			20	MeOH (anion = I ⁻)	955
	K ⁺	4.47	CD			25	MeOH (anion = Br ⁻)	960
	K ⁺	4.48	Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	962
	K ⁺	5.5	Sol Extr- CyVolt			25?	NBnz, 0.001 M Ph ₄ AsPh ₄ B	964
	K ⁺	6.4	CD			25	i-PrOH (anion = Br ⁻)	960
	K ⁺	5.3	CD			25	85 wt% Trifluoroethanol·H ₂ O	960
	K ⁺	>6.7	CD			25	Trifluoroethanol (anion = Br ⁻)	960
	Rb ⁺	6.9	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950, 961
	Rb ⁺	4.81	Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	962
	Cs ⁺	6.0	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950, 961
	Cs ⁺	3.90	Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	962
	Tl ⁺	5.9	Polg			23	MeCN, 0.05 M Bu ₄ NClO ₄	950, 961
	NH ₄ ⁺	1.67	Spec			25	MeOH, 0.1 M Bu ₄ NClO ₄	962
Virginiamycin S ₁	H ⁺	7.96	Spec	-33.47	-79.62	?	MeOH·H ₂ O (7:3/w:w), 0.1 M Bu ₄ NClO ₄ , pH 8	965
Virginiamycin S ₄	H ⁺	7.92	Spec	-29.62	-63.10	?	MeOH·H ₂ O (7:3/w:w), 0.1 M Bu ₄ NClO ₄ , pH 8	965
Viridogrisein I	H ⁺	8.00	Spec	-18.74	-32.18	?	MeOH·H ₂ O (7:3/w:w), 0.1 M Bu ₄ NClO ₄ , pH 8	965

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH_f , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
CHART LXXX								
Peptide-1	Ca ²⁺	5.48(1+2)	CD			25?	MeCN (anion = ClO ₄ ⁻)	966
Peptide-2	Ca ²⁺	3.70(1+2)	CD			25?	MeCN (anion = ClO ₄ ⁻)	966
Peptide-3	H ⁺	9.58(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	H ⁺	6.26(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	5.41	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	12.42	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiHL)					(Ni ²⁺ + L + H ⁺)	967
	Ni ²⁺	-11.2	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₂ L)					(Ni ²⁺ + L)	967
	Ni ²⁺	-20.01	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₃ L)					(Ni ²⁺ + L)	967
	Cu ²⁺	7.58	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Cu ²⁺	13.36	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuHL)					(Cu ²⁺ + L + H ⁺)	967
	Cu ²⁺	1.48	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₁ L)					(Cu ²⁺ + L)	967
Cu ²⁺	-4.67	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₂ L)					(Cu ²⁺ + L)	967	
Cu ²⁺	-14.71	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₃ L)					(Cu ²⁺ + L)	967	
Peptide-4	H ⁺	9.54(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	H ⁺	6.16(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	4.7	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	12.6	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiHL)					(Ni ²⁺ + L + H ⁺)	967
	Ni ²⁺	-12.4	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₂ L)					(Ni ²⁺ + L)	967
	Ni ²⁺	-22.7	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₃ L)					(Ni ²⁺ + L)	967
	Cu ²⁺	7.64	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Cu ²⁺	13.02	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuHL)					(Cu ²⁺ + L + H ⁺)	967
	Cu ²⁺	1.95	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₁ L)					(Cu ²⁺ + L)	967
Cu ²⁺	-6.47	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₂ L)					(Cu ²⁺ + L)	967	
Cu ²⁺	-16.32	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₃ L)					(Cu ²⁺ + L)	967	
Peptide-5	H ⁺	6.35	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	2.71	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	-4.38	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₁ L)					(Ni ²⁺ + L)	967
	Ni ²⁺	-21.11	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₃ L)					(Ni ²⁺ + L)	967
	Cu ²⁺	-1.81	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₁ L)					(Cu ²⁺ + L)	967
	Cu ²⁺	-7.74	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₂ L)					(Cu ²⁺ + L)	967
Cu ²⁺	-16.43	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₃ L)					(Cu ²⁺ + L)	967	
Peptide-6	H ⁺	9.51(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	H ⁺	6.19(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	5.27	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	12.29	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiHL)					(Ni ²⁺ + L + H ⁺)	967
	Ni ²⁺	-12.3	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₂ L)					(Ni ²⁺ + L)	967
	Ni ²⁺	-21.12	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₃ L)					(Ni ²⁺ + L)	967
	Cu ²⁺	7.67	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Cu ²⁺	13.45	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuHL)					(Cu ²⁺ + L + H ⁺)	967
	Cu ²⁺	1.49	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₁ L)					(Cu ²⁺ + L)	967
Cu ²⁺	-5.45	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₂ L)					(Cu ²⁺ + L)	967	
Cu ²⁺	-15.14	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₃ L)					(Cu ²⁺ + L)	967	
Peptide-7	H ⁺	9.52(1)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	H ⁺	6.21(2)	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	4.47	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Ni ²⁺	12.1	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiHL)					(Ni ²⁺ + L + H ⁺)	967
	Ni ²⁺	-12.62	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₂ L)					(Ni ²⁺ + L)	967
	Ni ²⁺	-20.7	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(NiH ₃ L)					(Ni ²⁺ + L)	967
	Cu ²⁺	7.39	Pot			25	H ₂ O, 0.1 M KNO ₃	967
	Cu ²⁺	12.85	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuHL)					(Cu ²⁺ + L + H ⁺)	967
	Cu ²⁺	1.00	Pot			25	H ₂ O, 0.1 M KNO ₃	967
		(CuH ₁ L)					(Cu ²⁺ + L)	967
Cu ²⁺	-7.32	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₂ L)					(Cu ²⁺ + L)	967	
Cu ²⁺	-17.33	Pot			25	H ₂ O, 0.1 M KNO ₃	967	
	(CuH ₃ L)					(Cu ²⁺ + L)	967	

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
cyclo(D·Asp·D·Phe·Pro) ₂ ^f	Ba ²⁺	8.56 (1+2)	CD			?	MeCN	968
cyclo[L·Cys(Amc)·L·Phe·L·Pro] ₂ ^f	Ca ²⁺	5.65	CD			?	MeCN (anion = ClO ₄) (Acm = acetoamidemethyl group)	971,972
	Ba ²⁺	4.10	CD			?	MeCN (anion = ClO ₄) (Acm = acetoamidemethyl group)	971,972
H-cyclo(Cys·Cys)·OH ^g	H ⁺	6.93(1)	Pot			25	H ₂ O, 0.1 M KCl	969
	H ⁺	2.35(2)	Pot			25	H ₂ O, 0.1 M KCl	969
H-cyclo(Cys·Gly·Cys)·OH ^g	H ⁺	5.61(1)	Pot			25	H ₂ O, 0.1 M KCl	969
	H ⁺	2.53(2)	Pot			25	H ₂ O, 0.1 M KCl	969
H-cyclo(Cys·Gly ₂ ·Cys)·OH ^g	H ⁺	6.23(1)	Pot			25	H ₂ O, 0.1 M KCl	969
	H ⁺	2.46(2)	Pot			25	H ₂ O, 0.1 M KCl	969
H-cyclo(Cys·Gly ₃ ·Cys)·OH ^g	H ⁺	6.19(1)	Pot			25	H ₂ O, 0.1 M KCl	969
	H ⁺	2.84(2)	Pot			25	H ₂ O, 0.1 M KCl	969
H-cyclo(Cys·Gly ₄ ·Cys)·OH ^g	H ⁺	6.49(1)	Pot			25	H ₂ O, 0.1 M KCl	969
	H ⁺	2.63(2)	Pot			25	H ₂ O, 0.1 M KCl	969
	Ba ²⁺	2.41	CD			25	MeOH·H ₂ O (7:3/v/v)	970
cyclo[Glu(OMe)·Pro] ₂ ^f	Li ⁺	2.94 (Li ₂ L)	CD			?	MeOH·H ₂ O (95:1)	973
	Na ⁺	2.98 (Na ₂ L)	CD			?	MeOH·H ₂ O (95:1)	973
	K ⁺	v.small (K ₂ L)	CD			?	MeOH·H ₂ O (95:1)	973
	Mg ²⁺	1.59	CD			?	MeOH·H ₂ O (95:1)	973
	Ca ²⁺	1.76	CD			?	MeOH·H ₂ O (95:1)	973
	Ba ²⁺	2.46	CD			?	MeOH·H ₂ O (95:1)	973
cyclo[L·Glu(OMe)·Sar·L·Lys(Z)·Sar·L·Leu·Sar·L·Leu·Sar] ^g	Na ⁺	~1.11	CD			25?	MeOH·H ₂ O (95:5)	974
	K ⁺	2.08	CD			25?	MeOH·H ₂ O (95:5)	974
	Mg ²⁺	~0.90	CD			25?	MeOH·H ₂ O (95:5)	974
	Ca ²⁺	4.28	CD			25?	MeOH·H ₂ O (95:5)	974
cyclo(Glu·Pro) ₂ ^f	Ca ²⁺	1.49	CD			?	MeOH·H ₂ O (95:1)	973
	Ba ²⁺	2.45	CD			?	MeOH·H ₂ O (95:1)	973
cyclo[Gly·L·cys[Bzl(OMe)]·Sar·L·Pro] ^g	Li ⁺	<2.70	CD			25	MeCN (anion = ClO ₄)	975
	Li ⁺	-0.72	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Na ⁺	none	CD			25	MeCN (anion = ClO ₄)	975
	Na ⁺	<-0.57	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	K ⁺	<0.08	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Rb ⁺	<0.15	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Mg ²⁺	5.00	CD			25	MeCN (anion = ClO ₄)	975
	Mg ²⁺	<-0.46	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Ca ²⁺	0.40	CD			25	H ₂ O	970
	Ca ²⁺	7.95(1+2)	CD			25	MeCN (anion = ClO ₄)	975
	Ca ²⁺	0.56	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Ca ²⁺	0.79	CD			25	MeOH·H ₂ O (4:6/v/v)	970
	Ca ²⁺	1.45	CD			25	MeOH·H ₂ O (7:3/v/v)	970
	Ba ²⁺	1.00	CD			25	H ₂ O	970
	Ba ²⁺	8.23(1+2)	CD			25	MeCN (anion = ClO ₄)	975
	Ba ²⁺	1.20	CD			25	MeOH·H ₂ O (1:9/v/v)	970
	Ba ²⁺	1.82	CD			25	MeOH·H ₂ O (4:6/v/v)	970
	Ba ²⁺	2.41	CD			25	MeOH·H ₂ O (7:3/v/v)	970
cyclo[Gly·L·Lys(Z)·Sar·L·Pro] ₂ ^f	Li ⁺	3.38	CD			20+25	MeCN	976, 977
	Na ⁺	very low	CD			20+25	MeCN	976, 977
	K ⁺	very low	CD			20+25	MeCN	976, 977
	Mg ²⁺	3.75	CD			20+25	MeCN	976, 977
	Ca ²⁺	3.88	CD			20+25	MeCN	976, 977
	Ba ²⁺	4.43	CD			20+25	MeCN	976, 977
cyclo(His·Asp) ^g	H ⁺	6.43	Pot			25?	H ₂ O	978
cyclo(L·His·Gly) ^g	H ⁺	6.30	Pot			25?	H ₂ O	978
	H ⁺	6.3	Pot			30	H ₂ O, I = 0.085	979
cyclo(L·His·L·His) ^g	H ⁺	6.61(1)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	H ⁺	5.54(2)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	H ⁺	6.531(1)	Pot	-30.6(Cal)	22.4	25	H ₂ O, 0.1 M KNO ₃	981
	H ⁺	5.491(2)	Pot	-28.4(Cal)	8.4	25	H ₂ O, 0.1 M KNO ₃	981
	H ⁺	5.61	Pot			25?	H ₂ O	978
	Co ²⁺	2.8(1)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Co ²⁺	2.3(2)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Ni ²⁺	3.8(1)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Ni ²⁺	2.6(2)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Cu ²⁺	6.1(1)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Cu ²⁺	4.9(2)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Cu ²⁺	6.01(1)	Pot	-41.3(Cal)	-23.8	25	H ₂ O, 0.1 M KNO ₃	981
	Cu ²⁺	4.55(2)	Pot	-29.7(Cal)	-12.1	25	H ₂ O, 0.1 M KNO ₃	981
	Cu ²⁺	3.46 (Cu ₂ H ₂ L)	Pot	-18.0(Cal)	6.3	25	H ₂ O, 0.1 M KNO ₃	981
	Zn ²⁺	3.8(1)	Pot			25	H ₂ O, 0.2 M KNO ₃	980
	Zn ²⁺	2.9(2)	Pot			25	H ₂ O, 0.2 M KNO ₃	980

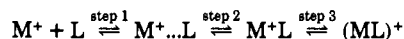
TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^c	ref
cyclo(His·Leu) [#]	H ⁺	6.40	Pot			25?	H ₂ O	978
cyclo(His·Met) [#]	H ⁺	6.21	Pot			25?	H ₂ O	978
cyclo(L·His·OAc·L·Ser) [#]	H ⁺	6.2	Pot			30	H ₂ O, I = 0.085	979
cyclo(His·Phe) [#]	H ⁺	6.50	Pot			25?	H ₂ O	978
cyclo(L·His·D·Ser) [#]	H ⁺	6.35	NMR			25	H ₂ O	982
cyclo(L·His·L·Ser) [#]	H ⁺	6.55	NMR			25	H ₂ O	982
cyclo(His·Ser) [#]	H ⁺	6.27	Pot			25?	H ₂ O	978
cyclo(L·His·L·Ser) [#]	H ⁺	6.4	Pot			30	H ₂ O, I = 0.085	979
cyclo(L·His·D·Thr) [#]	H ⁺	6.57	NMR			25	H ₂ O	982
cyclo(L·His·L·Thr) [#]	H ⁺	6.57	NMR			25	H ₂ O	982
cyclo(His·Thr) [#]	H ⁺	6.59	Pot			25?	H ₂ O	978
cyclo(His·Tyr) [#]	H ⁺	6.48	Pot			25?	H ₂ O	978
cyclo(L·Leu·Gla) [#]	Ba ²⁺	3.11	CD			25?	95% MeOH (Gla = glycolic acid)	983
cyclo[L·Leu·L·Phe·L·Pro] [#]	Ca ²⁺	4.02	CD			25?	MeCN (anion = ClO ₄ ⁻)	971, 972
	Ba ²⁺	2.66	CD			25?	MeCN (anion = ClO ₄ ⁻)	971, 972
cyclo(L·Leu·L·Phe·L·Pro) [#]	Ba ²⁺	4.49	CD			25?	MeCN	984
cyclo(L·Leu·Pro) [#]	K ⁺	~0.48	CD			25	86% MeOH (anion = Cl ⁻)	985
	Ba ²⁺	2.62	CD			25	95% MeOH (anion = ClO ₄ ⁻)	985
	Ca ²⁺	very low	CD			25	95% MeOH (anion = ClO ₄ ⁻)	985
cyclo(D·Leu·Pro) [#]	Ba ²⁺	2.60	CD			25?	95% MeOH	9863
cyclo[Lys(Z)·Pro] [#]	K ⁺	~0.48	CD			25	86% MeOH (anion = Cl ⁻)	985
	Ca ²⁺	2.11	CD			25	95% EtOH (anion = ClO ₄ ⁻)	985
	Ba ²⁺	3.11	CD			25	95% EtOH (anion = ClO ₄ ⁻)	985
cyclo[L·Lys(Z)·Sar·L·Leu·Sar·L·Leu·Sar·L·Leu·Sar] [#]	Na ⁺	2.15	CD			25?	MeOH·H ₂ O (95:5)	974
	K ⁺	2.60	CD			25?	MeOH·H ₂ O (95:5)	974
	Mg ²⁺	~1.00	CD			25?	MeOH·H ₂ O (95:5)	974
	Ca ²⁺	4.46	CD			25?	MeOH·H ₂ O (95:5)	974
cyclo(L·MeAla·Sar) [#]	Na ⁺	2.60	CD			25	EtOH	953
	K ⁺	2.30	CD			25	EtOH	953
cyclo(L·MeVal·D·HyIv) [#]	Na ⁺	none	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
	K ⁺	none	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
cyclo(L·MeVal·D·HyIv) [#]	Na ⁺	3.00	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
	K ⁺	3.38	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
cyclo(L·MeVal·D·HyIv) [#]	Na ⁺	none	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
	K ⁺	none	CD			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
cyclo(L·Pro·Sar) [#]	Li ⁺	none	CD			25?	MeOH·H ₂ O (4:1/v/v)	986, 987
	Na ⁺	~-0.74	CD			25?	MeOH·H ₂ O (4:1/v/v)	986, 987
	Mg ²⁺	~-1.30	CD			25?	MeOH·H ₂ O (4:1/v/v)	986, 987
	Ca ²⁺	~-0.53	CD			25?	MeOH·H ₂ O (4:1/v/v)	986, 987
	Ba ²⁺	~-0.17	CD			25?	MeOH·H ₂ O (4:1/v/v)	986, 987
cyclo(Sar·L·Pro·Sar·L·Pro) [#]	Li ⁺	<-0.77	CD			25	H ₂ O	970
	Na ⁺	<-0.89	CD			25	H ₂ O	970
	K ⁺	<-0.77	CD			25	H ₂ O	970
	Rb ⁺	<-0.74	CD			25	H ₂ O	970
	Mg ²⁺	<-0.06	CD			25	H ₂ O	970
	Ca ²⁺	<-0.39	CD			25	H ₂ O	970
	Ba ²⁺	<-0.43	CD			25	H ₂ O	970
cyclo(D·Val·L·Lac·L·Val·D·HyIv) [#]	K ⁺	none	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue, Lac = lactic acid residue)	953
cyclo(D·Val·L·Lac·L·Val·D·HyIv) [#]	K ⁺	2.00	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue, Lac = lactic acid residue)	953
cyclo(D·Val·L·Lac·L·Val·D·Lac) [#]	K ⁺	6.36	Cond			25	EtOH (Lac = lactic acid residue)	953
cyclo(D·Val·L·HyIv·L·Val·D·HyIv) [#]	K ⁺	5.60	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue)	953
cyclo(L·Val·L·Lac·L·Val·D·HyIv) [#]	K ⁺	none	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue, Lac = lactic acid residue)	953
cyclo(D·Val·L·Lac·D·Val·D·HyIv) [#]	K ⁺	none	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue, Lac = lactic acid residue)	953
cyclo(D·Val·L·Lac·L·Val·L·HyIv) [#]	K ⁺	none	Cond			25	EtOH (HyIv = α -hydroxyisovaleric acid residue, Lac = lactic acid residue)	953
S,S'-bis[cyclo(Gly·L·hemiCys·Sar·L·Pro)] [#]	Li ⁺	-0.72	CD			25	H ₂ O	970

TABLE I (Continued)

ligand	cation	log K^a	method ^b	ΔH , kJ/mol	ΔS , J/K·mol	T , °C	conditions ^c	ref
	Na ⁺	<-0.62	CD			25	H ₂ O	970
	K ⁺	<-0.54	CD			25	H ₂ O	970
	Rb ⁺	0.11	CD			25	H ₂ O	970
	Cs ⁺	0.08	CD			25	H ₂ O	970
	Mg ²⁺	<-0.35	CD			25	H ₂ O	970
	Ca ²⁺	-0.22	CD			25	H ₂ O	970
	Ca ²⁺	-0.10	CD			25	MeOH·H ₂ O (1:9/v:v)	970
	Ba ²⁺	0.76	CD			25	H ₂ O	970
	Ba ²⁺	0.91	CD			25	MeOH·H ₂ O (1:9/v:v)	970

^a Reactions: The log K values are for 1:1 interactions unless consecutive reactions occur. Interactions of the 1:1 type are either of the cation-ligand type (cation-L, no further designation) or of the cation protonated-ligand type (indicated by MHL, etc., placed in parentheses following the log K value). Two kinds of consecutive reactions have been reported. The most numerous kind is that in which either protons interact consecutively with the macrocycle or macrocycles interact consecutively with the cation. These interactions are indicated by (1), (2), etc., placed after the log K value. The second and less common kind of consecutive reaction is that in which cations interact consecutively with the macrocycle to form M_2L species. Where these occur, the second reaction is indicated by placing the reaction product (M_2L , etc.) in parentheses after the log K species. When no complexation between cation and ligand occurs, this fact is denoted by 'none'; 'nm' means the log K values are too small to be measured; 'ppt' means value was not determined because of precipitation. ^b Methods: AA = atomic absorption, ANS Anal = 8-anilino-naphthalene-1-sulfonate analysis, Cal = calorimetry, Calc'd = calculated, CD = circular dichroism, Cl⁻ Anal = chloride analysis, ClO₄⁻ Anal = perchlorate analysis, Cond = conductivity, CyVol = cyclic voltammetry, EJ = electric field jump, Fluor = fluorescent spectroscopy, IEM = ion exchange, IRSpec = infrared spectroscopy, ISE = ion selective electrode, ITA = isotachopheresis, Kin = kinetic (calculated from kinetic data), Mac Anal = macrocycle analysis, Mac Dist = macrocycle distribution, NMR = nuclear magnetic resonance spectroscopy, ORD = optical rotary dispersion, OSM = osmometry, Pic Anal = picrate analysis, PJ = pressure jump, Polg = polarography, a. c. Polg = alternating current polarography, d. c. Polg = direct current polarography, Pot = potentiometry, Rad = radiometry (radiotracer), Radpolg = radiopolarography, SCN⁻ Anal = rhodanate analysis, Sol = solubility, Solv Extr = solvent extraction, Spec = spectrophotometry, Sr²⁺ Anal = strontium analysis, TJ = temperature jump, US = ultrasound, UV = ultraviolet spectra, Volt = voltammetry. ^c Conditions: DOH and D₂O = deuterated water, H₂O = water, D₂O sat'd CDCl₃ = chloroform saturated with water, BnzCN = benzonitrile, Bu = *n*-butyl, *n*-BuOH = *n*-butyl alcohol, *t*-BuOH = *tert*-butyl alcohol, CAPS = 3-(cyclohexylamino)-propanesulfonate, CCl₄ = tetrachloromethane, CDCl₂CDCl₂ = deuterated 1,1,2,2-tetrachloroethane, CDCl₃ = deuterated chloroform, CHCl₃ = chloroform, CD₂Cl₂ = deuterated dichloromethane, CH₂Cl₂ = dichloromethane, C₂H₂Cl₄ = tetrachloroethane, *o*-C₆H₄Cl₂ = *o*-dichlorobenzene, C₆H₆ = benzene, C₆H₅Cl = chlorobenzene, C₆C₁₂ = hexane, DCE = 1,2-dichloroethane, DEF = diethylformamide, Diox = 1,4-dioxane, DMAC = dimethylacetamide, DME = 1,2-dimethoxyethane, DMF = dimethylformamide, Et = ethyl, EtOH = ethanol, Form = formamide, HMPA = hexamethylphosphoramide, HEPES = *N*-(2-hydroxyethyl)-piperazine-*N'*-ethanesulfonate, hex = *n*-hexyl, *I* = ionic strength, K₂H₂edta = dipotassium ethylenediamine-tetraacetate, Me = methyl, MeCN = acetonitrile, MeCN-*d*₃ = deuterated acetonitrile, Me₂CO = acetone, Me₂CO-*d*₆ = deuterated acetone, Me₄Guan = tetramethylguanidine, MES = 2-(*N*-morpholino)ethanesulfonate, MeNH₂ = methylamine, MeOH = methanol, MeOD-*d*₃ and MeOH-*d*₃ = deuterated methanol, Me₂SO = dimethyl sulfoxide, Me₂SO-*d*₆ = deuterated dimethyl sulfoxide, Me₄U = tetramethylurea, NBnz = nitrobenzene, NMe = nitromethane, NMF = *N*-methylformamide, *n*-OctOH = *n*-octyl alcohol, PC = propylene carbonate, PEG 200 = polyethylene glycol, PrOH = propyl alcohol, *i*-PrOH = *iso*-propyl alcohol, Py = pyridine, Py-*d*₅ = deuterated pyridine, THF = tetrahydrofuran, TMO = trimethylene oxide, Tris = tris(hydroxymethyl)aminomethane, TsO = tosyl, ZLI-2806 = eutectic nematic liquid crystal. ^d H = high spin, L = low spin. ^e The steps are as follows:



where M^+ = solvated metal ion, L = macrocyclic ligand, $M^+ \dots L$ solvent-separated metal-macrocyclic ligand pair, M^+L = contact pair, $(ML)^+$ = final complex with the metal cation embedded in the macrocyclic cavity. ^f For structure see Chart LXXXI. ^g Amino acid abbreviations and names are given in Nomenclature for Charts.

TABLE II. ΔC_p Values for Cation-Macrocycle Interaction in Solution

ligand	cation	ΔC_p^a J/mol·K	method ^b	T, °C	conditions ^c	ref
Cy ₂ 18C6-1	K ⁺	53	Cal	25	H ₂ O, I = 0	624
	Rb ⁺	44	Cal	25	H ₂ O, I = 0	624
	Sr ²⁺	17	Cal	25	H ₂ O, I = 0	624
	Ba ²⁺	35	Cal	25	H ₂ O, I = 0	624
Cy ₂ 18C6-2	K ⁺	20	Cal	25	H ₂ O, I = 0	624
	Rb ⁺	5	Cal	25	H ₂ O, I = 0	624
	Cs ⁺	0	Cal	25	H ₂ O, I = 0	624
	Sr ²⁺	0	Cal	25	H ₂ O, I = 0	624
	Ba ²⁺	4	Cal	25	H ₂ O, I = 0	624
[2.2.2]-1	H ⁺	-60 (1)	Cal	25	H ₂ O	882
	H ⁺	-102 (2)	Cal	25	H ₂ O	882
	Li ⁺	2	Cal	25	MeOH (anion = Cl ⁻)	1033
	Na ⁺	71	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	Na ⁺	-34	Cal	25	MeOH (anion = Cl ⁻)	1033
	K ⁺	39	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	K ⁺	-88	Cal	25	MeOH (anion = Cl ⁻)	1033
	Rb ⁺	11	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	Rb ⁺	-82	Cal	25	MeOH (anion = Cl ⁻)	1033
	Cs ⁺	-26	Cal	25	MeOH (anion = Cl ⁻)	1033
	Ca ²⁺	-27	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	Ca ²⁺	-343	Cal	25	MeOH (anion = Cl ⁻)	1033
	Sr ²⁺	125	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	Sr ²⁺	-89	Cal	25	MeOH (anion = Cl ⁻)	1033
	Ba ²⁺	77	Cal	25	H ₂ O (anion = Cl ⁻)	1033
	Ba ²⁺	-245	Cal	25	MeOH (anion = Cl ⁻)	1033

^a ΔC_p values are for 1:1 interactions unless consecutive reactions occur. Interactions, where protons interact consecutively with the macrocycle are indicated by (1) and (2), placed after ΔC_p values. ^b Cal = calorimetry. ^c H₂O = water, MeOH = methanol, I = ionic strength.

TABLE III. Radii (pm = picometer) of Several Inorganic Anions

anion	radius, pm	anion	radius, pm	anion	radius, pm	anion	radius, pm
Cl ⁻	172 ^a , 172 ^b , 179 ^c	BrO ₃ ⁻	154 ^a , 219 ^c	I ⁻	210 ^a , 220 ^c	CO ₃ ²⁻	178 ^a , 201 ^c
Br ⁻	188 ^a , 199 ^c	IO ₃ ⁻	122 ^a , 224 ^c	NO ₃ ⁻	179 ^a , 208 ^c	SO ₄ ²⁻	258 ^a , 224 ^c

^a Reference 1037. ^b Reference 1038. ^c Reference 1039.

TABLE IV. Log K , ΔH , and ΔS Values for Anion-Macrocyclic Interaction in Solution

ligand	anion ^a	log K^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref
CHART V								
A ₄ 14C4-1	CO ₃ ²⁻	none	Polg			25	H ₂ O	1040
CHART XIII								
A ₅ 15C5-1	OOCCH ₂ COO ⁻	nm(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOC(CH ₂) ₂ COO ⁻	nm(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOCCH(OH)CH ₂ COO ⁻	nm(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	citrate ³⁻	1.74(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	AMP ²⁻	3.19(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	3.94(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	4.01(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
CHART XIV								
A ₄ 16C4-4	F ⁻	1.9(XH ₄ L)	ISE			20	H ₂ O, 0.1 M KNO ₃ , pH 4	456
CHART XVI								
PyA ₄ 16C5-1	AMP ²⁻	2.52(XH ₂ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	2.34(XH ₂ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	2.25(XH ₂ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
A ₅ 16C5-1	[Fe(CN) ₆] ⁴⁻	3.51(XH ₃ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ³⁻	2.79(XH ₃ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	CO ₃ ²⁻	4.44(XH ₃ L)	Polg			25	H ₂ O, pH 6.5-8.6 (Tris) to 9.3 (borate)	1040
	HPO ₄ ²⁻	2.04(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	·OOCCH ₂ COO ⁻	1.82(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOC(CH ₂) ₂ COO ⁻	2.08(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOCCH(OH)CH ₂ COO ⁻	1.70(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	104
	cis-·OOCCH=CHCOO ⁻	1.88(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	trans-·OOCCH=CHCOO ⁻	nm(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	citrate ³⁻	2.40(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	AMP ²⁻	3.11(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	3.17(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	3.63(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	K ₂ A ₅ 16C5-1	[Fe(CN) ₆] ⁴⁻	1.75(XHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄
[Fe(CN) ₆] ³⁻		2.5(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
HPO ₄ ²⁻		<0.5(XHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
HPO ₄ ²⁻		<0.5(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
citrate ³⁻		<0.5(XHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
citrate ³⁻		1.3(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
AMP ²⁻		2.70(XHL)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.06 M borate)	472
AMP ²⁻		2.18(XHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
AMP ²⁻		3.35(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
ADP ³⁻		2.08(XHL)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.06 M borate)	472
ATP ⁴⁻		2.68(XHL)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.06 M borate)	472
ATP ⁴⁻		2.68(XHL)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
ATP ⁴⁻		3.64(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
CHART XIX								
A ₄ 17C5-1	CO ₃ ²⁻	4.28(XH ₃ L)	Polg			25	H ₂ O, pH 7.0-8.2 (Tris) to 9.3-10.0 (borate)	1040
	·OOCCH ₂ COO ⁻	1.40(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOC(CH ₂) ₂ COO ⁻	1.96(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOCCH(OH)CH ₂ COO ⁻	1.42(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	citrate ³⁻	3.0(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	AMP ²⁻	2.84(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	3.0(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	3.71(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
CHART XXI								
Sn ₂ 18C2-1	Cl ⁻	2.91	NMR			25	MeCN	1042
	Cl ⁻	2.84(X ₂ L)	NMR			25	MeCN	1042
CHART XXII								
A ₄ 18C4-1	F ⁻	2.0(XH ₄ L)	ISE			20	H ₂ O, 0.1 M KNO ₃ , pH 5 (X ⁻ + H ₄ L ⁴⁺)	456
	AMP ²⁻	3.84(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	4.51(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	6.65(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH_f , kJ/mol	ΔS_f , J/K·mol	<i>T</i> , °C	conditions ^d	ref
CHART XXXVI								
Ag18C6-1	CO ₃ ²⁻	2.76(XH ₃ L)	Polg			25	H ₂ O, pH 8-10 (borate)	1040
	NO ₃ ⁻	2.25(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.29	720
	NO ₃ ⁻	2.37(XH ₄ L)	Pot	-1.67	50.2	25	H ₂ O, <i>I</i> = 0.22	720
	NO ₃ ⁻	2.51(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.15	720
	NO ₃ ⁻	2.61(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.11	720
	HPO ₄ ²⁻	1.14(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	SO ₄ ²⁻	1.53(XH ₃ L)	Pot			15	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.67(XH ₃ L)	Pot			25	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.65(XH ₃ L)	Pot			35	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.70(XH ₃ L)	Pot			45	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.85(XH ₃ L)	Pot			55	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.51(XH ₃ L)	Pot			15	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.64(XH ₃ L)	Pot	11.7	69.9	25	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.62(XH ₃ L)	Pot			35	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.67(XH ₃ L)	Pot			45	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.82(XH ₃ L)	Pot			55	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	2.38(XH ₃ L)	Pot			25	H ₂ O, 0.05 M NaCl	721
	SO ₄ ²⁻	2.08(XH ₃ L)	Pot			25	H ₂ O, 0.11 M NaCl	721
	SO ₄ ²⁻	1.51(XH ₃ L)	Pot			25	H ₂ O, 0.21 M NaCl	721
	SO ₄ ²⁻	4.01(XH ₄ L)	Pot			15	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.79(X ₂ H ₄ L)	Pot			15	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	4.18(XH ₄ L)	Pot			25	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.92(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	4.28(XH ₄ L)	Pot			35	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	2.06(X ₂ H ₄ L)	Pot			35	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	4.40(XH ₄ L)	Pot			45	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	1.98(X ₂ H ₄ L)	Pot			45	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	4.56(XH ₄ L)	Pot			55	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	2.09(X ₂ H ₄ L)	Pot			55	H ₂ O, 0.205 M NaCl	721
	SO ₄ ²⁻	3.97(XH ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.78(X ₂ H ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	4.12(XH ₄ L)	Pot	23.4	158	25	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.90(X ₂ H ₄ L)	Pot	8.79	65.3	25	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	4.24(XH ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	2.05(X ₂ H ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	4.36(XH ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	1.96(X ₂ H ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	4.51(XH ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	2.07(X ₂ H ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	721
	SO ₄ ²⁻	4.90(XH ₄ L)	Pot			25	H ₂ O, 0.05 M NaCl	721
	SO ₄ ²⁻	3.02(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.05 M NaCl	721
	SO ₄ ²⁻	4.34(XH ₄ L)	Pot			25	H ₂ O, 0.11 M NaCl	721
	SO ₄ ²⁻	2.51(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.11 M NaCl	721
	SO ₄ ²⁻	4.15(XH ₄ L)	Pot			25	H ₂ O, 0.21 M NaCl	721
	SO ₄ ²⁻	1.85(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.21 M NaCl	721
	SO ₄ ²⁻	8.08(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.05 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), conditional equil. const.	721
	SO ₄ ²⁻	8.58(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.05 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), thermodynamic equil. const.	721
	SO ₄ ²⁻	7.85(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.11 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), conditional equil. const.	721
	SO ₄ ²⁻	8.52(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.11 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), thermodynamic equil. const.	721
	SO ₄ ²⁻	7.71(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.21 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), conditional equil. const.	721
	SO ₄ ²⁻	8.53(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.21 M NaCl (XH ₃ L ⁺ + H ⁺ + X ²⁻), thermodynamic equil. const.	721
	Cl ⁻	1.526(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.44	720
	Cl ⁻	1.679(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.29	720
	Cl ⁻	1.800(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.22	720
	Cl ⁻	1.934(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.15	720
	Cl ⁻	2.021(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.11	720
	Cl ⁻	1.763(XH ₄ L)	Pot			15	H ₂ O, <i>I</i> = 0.22	720
	Cl ⁻	1.837(XH ₄ L)	Pot	20.5	100	25	H ₂ O, <i>I</i> = 0.22	720
	Cl ⁻	1.932(XH ₄ L)	Pot			35	H ₂ O, <i>I</i> = 0.22	720
	Cl ⁻	2.034(XH ₄ L)	Pot			45	H ₂ O, <i>I</i> = 0.22	720
	Cl ⁻	2.210(XH ₄ L)	Pot			55	H ₂ O, <i>I</i> = 0.22	720
	ClO ₄ ⁻	1.10(XH ₄ L)	Pot			15	H ₂ O, 0.235 M NaCl	1043
	ClO ₄ ⁻	0.94(XH ₄ L)	Pot			25	H ₂ O, 0.235 M NaCl	1043
	ClO ₄ ⁻	1.04(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.22	720
	ClO ₄ ⁻	1.26(XH ₄ L)	Pot			25	H ₂ O, <i>I</i> = 0.11	720
	ClO ₄ ⁻	0.92(XH ₄ L)	Pot			35	H ₂ O, 0.235 M NaCl	1043
	ClO ₄ ⁻	0.85(XH ₄ L)	Pot			45	H ₂ O, 0.235 M NaCl	1043
	ClO ₄ ⁻	0.86(XH ₄ L)	Pot			55	H ₂ O, 0.235 M NaCl	1043
	ClO ₄ ⁻	1.11(XH ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	1043
	ClO ₄ ⁻	0.96(XH ₄ L)	Pot	-10.5	-15.9	25	H ₂ O, 0.22 M NaCl	1043
	ClO ₄ ⁻	0.94(XH ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	1043
	ClO ₄ ⁻	0.87(XH ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	1043

TABLE IV (Continued)

ligand	anion ^a	log K ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref
	ClO ₄ ⁻	0.88(XH ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	1043
	Br ⁻	1.46(XH ₄ L)	Pot			25	H ₂ O, I = 0.22	720
	Br ⁻	1.69(XH ₄ L)	Pot			25	H ₂ O, I = 0.11	720
	IO ₃ ⁻	2.74(XH ₄ L)	Pot			15	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	1.15(X ₂ H ₄ L)	Pot			15	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.78(XH ₄ L)	Pot			25	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	1.08(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.76(XH ₄ L)	Pot			25	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	1.08(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.78(XH ₄ L)	Pot			35	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	1.07(X ₂ H ₄ L)	Pot			35	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.82(XH ₄ L)	Pot			45	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	0.96(X ₂ H ₄ L)	Pot			45	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.86(XH ₄ L)	Pot			55	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	0.94(X ₂ H ₄ L)	Pot			55	H ₂ O, 0.234 M NaCl	1043
	IO ₃ ⁻	2.76(XH ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	1.16(X ₂ H ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	2.80(XH ₄ L)	Pot	5.44	71.6	25	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	1.09(X ₂ H ₄ L)	Pot	-9.62	-11.7	25	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	2.78(XH ₄ L)	Pot			25	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	1.09(X ₂ H ₄ L)	Pot			25	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	2.80(XH ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	1.08(X ₂ H ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	2.84(XH ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	0.97(X ₂ H ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	2.88(XH ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	1043
	IO ₃ ⁻	0.95(X ₂ H ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	1043
	CF ₃ COO ⁻	0.66(XH ₄ L)	Pot			15	H ₂ O, 0.271 M NaCl	1043
	CF ₃ COO ⁻	0.86(XH ₄ L)	Pot			25	H ₂ O, 0.271 M NaCl	1043
	CF ₃ COO ⁻	1.00(XH ₄ L)	Pot			35	H ₂ O, 0.271 M NaCl	1043
	CF ₃ COO ⁻	1.15(XH ₄ L)	Pot			45	H ₂ O, 0.271 M NaCl	1043
	CF ₃ COO ⁻	1.28(XH ₄ L)	Pot			55	H ₂ O, 0.271 M NaCl	1043
	CF ₃ COO ⁻	0.72(XH ₄ L)	Pot			15	H ₂ O, 0.22 M NaCl	1043
	CF ₃ COO ⁻	0.91(XH ₄ L)	Pot	27.2	108	25	H ₂ O, 0.22 M NaCl	1043
	CF ₃ COO ⁻	1.04(XH ₄ L)	Pot			35	H ₂ O, 0.22 M NaCl	1043
	CF ₃ COO ⁻	1.20(XH ₄ L)	Pot			45	H ₂ O, 0.22 M NaCl	1043
	CF ₃ COO ⁻	1.32(XH ₄ L)	Pot			55	H ₂ O, 0.22 M NaCl	1043
	·OOCCH ₂ COO ⁻	1.52(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOC(CH ₂) ₂ COO ⁻	1.26(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	·OOCCH(OH)CH ₂ COO ⁻	1.18(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	cis·OOCCH=CHCOO ⁻	1.46(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	trans·OOCCH=CHCOO ⁻	nm(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	citrate ³⁻	2.38(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	1041
	PhSO ₃ ⁻	0.32(XH ₄ L)	Pot			15	H ₂ O, 0.253 M NaCl	1043
	PhSO ₃ ⁻	0.48(XH ₄ L)	Pot			25	H ₂ O, 0.253 M NaCl	1043
	PhSO ₃ ⁻	0.66(XH ₄ L)	Pot			35	H ₂ O, 0.253 M NaCl	1043
	PhSO ₃ ⁻	0.80(XH ₄ L)	Pot			45	H ₂ O, 0.253 M NaCl	1043
	PhSO ₃ ⁻	0.93(XH ₄ L)	Pot			55	H ₂ O, 0.253 M NaCl	1043
	PhSO ₃ ⁻	0.36(XH ₄ L)	Pot			15	H ₂ O, 0.25 M NaCl	1043
	PhSO ₃ ⁻	0.51(XH ₄ L)	Pot	27.6	103	25	H ₂ O, 0.25 M NaCl	1043
	PhSO ₃ ⁻	0.70(XH ₄ L)	Pot			35	H ₂ O, 0.25 M NaCl	1043
	PhSO ₃ ⁻	0.83(XH ₄ L)	Pot			45	H ₂ O, 0.25 M NaCl	1043
	PhSO ₃ ⁻	0.96(XH ₄ L)	Pot			55	H ₂ O, 0.25 M NaCl	1043
	AMP ²⁻	3.25(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ADP ³⁻	5.65(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	ATP ⁴⁻	6.40(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7 (0.1 M Tris)	472
	anion·1 ^e	2.69(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 8.1-8.4 (0.03·0.06 M borate)	726
	anion·2 ^e	2.62(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 8.1-8.4 (0.03·0.06 M borate)	726
	anion·3 ^e	2.36(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7.7-8.5 (0.1 M Tris), (X ⁻ + H ₃ L ³⁺)	726
	anion·4 ^e	2.67(HXH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7.4-8.3 (0.1 M Tris), (HX ⁻ + H ₃ L ³⁺)	726
	anion·5 ^e	2.65(HXH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 8.1-8.7 (0.1 M Tris), (HX ⁻ + H ₃ L ²⁺)	726
	anion·6 ^e	2.92(XH ₃ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄ , pH 7.6-8.8 (0.1 M Tris), (X ⁻ + H ₃ L ³⁺)	726
				CHART XL				
A ₄ 20C ₄ ·1	[Fe(CN) ₆] ⁴⁻	3.62(XH ₄ L)	Pot	-4.60	54.4	25	H ₂ O, 0.15 M NaClO ₄	742
	[Co(CN) ₆] ³⁻	2.38(XH ₄ L)	Pot	-10.7	9.62	25	H ₂ O, 0.15 M NaClO ₄	742
	F ⁻	2.8(XH ₄ L)	ISE			20	H ₂ O, 0.1 M KNO ₃ , pH 5 (X ⁻ + H ₄ L ⁴⁺)	456
	HATP ³⁻	3.04(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1044
	ATP ⁴⁻	3.81(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1044
	ATP ⁴⁻	42.78(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (X ⁴⁻ + 4H ⁺ + L)	1044
	ATP ⁴⁻	48.25(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄ (X ⁴⁻ + 5H ⁺ + L)	1044

TABLE IV (Continued)

ligand	anion ^a	log K ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref
CHART XLVII								
A ₂ 21C7-1	[Fe(CN) ₆] ⁴⁻	4.27(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl, pH > 4	1045
	[Fe(CN) ₆] ⁴⁻	5.42(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl, pH > 4	1045
Sn ₂ 22C2-1	Cl ⁻	2.94	NMR			25	MeCN	1042
	Cl ⁻	2.75(X ₂ L)	NMR			25	MeCN	1042
(Guan) ₂ (1,4-B) ₂ 22C4-1	PO ₄ ³⁻	1.7	Pot			20	H ₂ O	1036
	PO ₄ ³⁻	3.1	Pot			20	MeOH-H ₂ O (9:1)	1036
CHART L								
Calix6-24C-4	anion-7 ^e	3.08	Fluor			30	H ₂ O, pH 9 (0.2 M borate buffer)	774
	anion-8 ^e	4.85	Spec			30	H ₂ O, pH 9 (0.2 M borate buffer)	774
Calix6-24C-10	anion-7 ^e	4.36	Fluor			30	H ₂ O	1046
CHART LI								
(Guan) ₃ 24C6-1	PO ₄ ³⁻	2.4	Pot			20	H ₂ O	1036
	PO ₄ ³⁻	4.3	Pot			20	MeOH·H ₂ O (9:1)	1036
A ₆ 24C6-1	[Fe(CN) ₆] ³⁻	4.2(XH ₄ L)	CyVol			25	H ₂ O, 0.1 M KCl	1047
	[Fe(CN) ₆] ³⁻	4.3(XH ₆ L)	CyVol			25	H ₂ O, 0.1 M Me ₄ NCl	1047
	[Fe(CN) ₆] ⁴⁻	6.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	[Fe(CN) ₆] ⁴⁻	6.4(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	1048
	[Co(CN) ₆] ³⁻	3.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	SO ₄ ²⁻	4.05(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 916
	SO ₄ ²⁻	3.05(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	916
	SO ₄ ²⁻	2.50(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	916
	·OOC·COO·	3.80(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 828
	·OOC·COO·	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	·OOC·COO·	2.60(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	·OOCCH ₂ COO·	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 828
	·OOCCH ₂ COO·	2.60(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	·OOCCH ₂ COO·	2.45(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	·OOC(CH ₂) ₂ COO·	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 828
	·OOC(CH ₂) ₂ COO·	2.05(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₂ COO·	1.80(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO·	2.35(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₃ COO·	2.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO·	2.20(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO·	2.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO·	2.20(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO·	2.35(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₅ COO·	2.00(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	<i>cis</i> -·OOCCH=CHCOO·	3.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 828
	<i>cis</i> -·OOCCH=CHCOO·	2.95(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	<i>cis</i> -·OOCCH=CHCOO·	2.70(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	<i>trans</i> -·OOCCH=CHCOO·	2.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 828
	<i>trans</i> -·OOCCH=CHCOO·	1.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	<i>trans</i> -·OOCCH=CHCOO·	1.75(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 916
	·OOC(CHOH) ₂ COO·	2.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	anion-9 ^e	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (anion-9 = squarate ²⁻)	781
	citrate ³⁻	4.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	1,3,5-(COO) ₃ Ph	3.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	AMP ²⁻	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049
	AMP ²⁻	2.75(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	1049
	AMP ²⁻	1.75(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	1049
	ADP ³⁻	6.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049
	ADP ³⁻	4.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	ADP ³⁻	4.00(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	ATP ⁴⁻	8.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049
	ATP ⁴⁻	6.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	1049
	ATP ⁴⁻	5.00(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	1049
CHART LII								
A ₆ 24C8-1	AMP ²⁻	6.95(XH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	AMP ²⁻	5.00(XH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	AMP ²⁻	2.85(XH ₄ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	HADP ²⁻	5.60(XH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1050
	ADP ³⁻	5.60(XH ₇ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049
	ADP ³⁻	8.30(XH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	ADP ³⁻	6.20(XH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	ADP ³⁻	3.40(XH ₄ L)	Pot			25	H ₂ O, 1.0 M TsONa	1049, 1050
	H ₂ ATP ²⁻	6.75(AH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1050
	HATP ³⁻	7.85(AH ₆ L)	Pot			25	H ₂ O, 1.0 M TsONa	1050
	ATP ⁴⁻	6.75(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	1049
	ATP ⁴⁻	7.85(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	1049
	ATP ⁴⁻	11.0(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	1049, 1050
	ATP ⁴⁻	8.15(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	1049, 1050
	ATP ⁴⁻	4.80(XH ₄ L)	Pot			25	H ₂ O, 0.1 M TsONa	1049, 1050
K ₄ A ₈ 24C8-1	HPO ₄ ²⁻	2.05(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	2.50(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	AMP ²⁻	3.84(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	ATP ⁴⁻	4.66(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
CHART LIII								
K ₄ Py ₂ (1,4-B) ₂ A ₄ 26C4-1	anion-10 ^e	2.60	Fluor			30	0.01 M aq. CAPS buffer-Me ₂ SO (95:5/v:v), pH 10, 0.1 M KCl	1051
K ₄ Py ₂ (1,4-B) ₂ A ₄ 26C4-2	anion-10 ^e	3.51	Fluor			30	0.01 M aq. CAPS buffer-Me ₂ SO (95:5/v:v), pH 10, 0.1 M KCl	1051

TABLE IV (Continued)

ligand	anion ^a	log K ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref	
CHART LV									
A ₉ 27C9-1	SO ₄ ²⁻	4.5(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	Fe(CN) ₆ ⁴⁻	6.3(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	Co(CN) ₆ ³⁻	3.3(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	·OOCOO·	4.7(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	·OOCCH ₂ COO·	3.8(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	·OOC(CH ₂) ₂ COO·	2.8(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	·OOC(CHOH) ₂ COO·	2.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	<i>cis</i> -·OOCCH=CHCOO·	4.0(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	<i>trans</i> -·OOCCH=CHCOO·	2.6(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	anion-9 ^e	3.4(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (anion-9 = squarate ²⁻)	781	
	citrate ³⁻	5.8(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	1,3,5-(COO) ₃ Ph	3.8(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	AMP ²⁻	4.7(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
	ADP ³⁻	7.7(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
ATP ⁴⁻	9.1(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781		
A ₉ 27C9-1	[Fe(CN) ₆] ⁴⁻	9.33(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	7.60(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	5.63(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	4.06(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	4.09(XH ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	3.78(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	3.36(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	3.00(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	2.61(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	(1,4-B) ₄ A ₂₈ C ₄ -1	anion-11 ^e	3.18	Fluor			19.5	H ₂ O	1053
(1,4-B) ₂ A ₄ 28C ₄ -1	anion-7 ^e	2.43	Fluor			20	H ₂ O, KCl-HCl buffer, pH 1.68	1054	
(1,4-B) ₂ A ₄ 28C ₄ -2	anion-7 ^e	2.34	Fluor			20	H ₂ O, KCl-HCl buffer, pH 1.68	1054	
(1,4-B) ₄ A ₄ 28C ₄ -1	anion-7 ^e	2.58	Fluor			25?	H ₂ O, pH 4.2	1055	
(1,4-B) ₄ A ₄ 28C ₄ -1	anion-7 ^e	2.74	Fluor			25?	H ₂ O, pH 2	1055	
(1,4-B) ₄ A ₄ 28C ₄ -2	1·HO-2·(COO) ⁻ Nap	3.06	Kin			27	1/15 M phosphate buffer 0.1 M KCl, pH 7.0 (cation = Na ⁺)	1056	
	2·HO-3·(COO) ⁻ Nap	3.05	Kin			27	1/15 M phosphate buffer 0.1 M KCl, pH 7.0 (cation = Na ⁺)	1056	
(1,4-B) ₄ A ₄ 28C ₄ -4	anion-7 ^e	5.88	Fluor	-28.3	30.1	20	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.72	Fluor			30	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	991, 1057	
	anion-7 ^e	5.60	Fluor			40	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.48	Fluor			50	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.72	Fluor			30	EtOH-H ₂ O (0.25:99.75/v:v) 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.14	Fluor			30	EtOH-H ₂ O (20:80/v:v) 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	4.99	Fluor			30	MeOH-H ₂ O (20:80/v:v) 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-11 ^e	6.15	Fluor			30	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	(1,4-B) ₄ A ₄ 28C ₄ -5	anion-12 ^e	4.81	Spec			30	H ₂ O, pH 7 (buffer)	991
	(1,4-B) ₄ A ₄ 28C ₄ -5	anion-7 ^e	5.90	Fluor			30	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057
(1,4-B) ₄ A ₄ 28C ₄ -6	anion-7 ^e	5.88	Fluor			30	EtOH-H ₂ O (0.25:99.75/v:v), 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.15	Fluor			30	EtOH-H ₂ O (20:80/v:v), 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
	anion-7 ^e	5.62	Fluor			30	MeOH-H ₂ O (20:80/v:v)	1057	
(1,4-B) ₄ A ₄ 28C ₄ -6	anion-11 ^e	6.11	Fluor			30	H ₂ O, 0.01 M HEPES, 0.1 M KCl, pH 8	1057	
(1,4-B) ₄ A ₄ 28C ₄ -6	anion-7 ^e	5.59	Fluor			30	EtOH-H ₂ O (0.25:99.75/v:v), 0.01 M MES, 0.1 M KCl, pH 5	1057	
K ₄ (1,4-B) ₄ A ₄ 28C ₄ -1	anion-10 ^e	2.30	Fluor			30	0.01 M aq. CAPS buffer- Me ₂ SO (95:5/v:v), pH 10, 0.1 M KCl	990, 1051	
K ₄ (1,4-B) ₄ A ₄ 28C ₄ -2	anion-10 ^e	2.00	Fluor			30	0.01 M aq. CAPS buffer- Me ₂ SO (95:5/v:v), pH 10, 0.1 M KCl	990, 1051	
K ₄ (1,4-B) ₄ A ₄ 28C ₄ -3	anion-13 ^e	2.72	Spec			30	EtOH-MeOH-H ₂ O (5:2:95/v:v:v) pH 8.7, 0.1 M KCl	1058	
K ₄ (1,4-B) ₄ A ₄ 28C ₄ -4	anion-7 ^e	4.04	Fluor			30	0.01 M aq. MES buffer + 5% v/v EtOH, pH 6.0, 0.1 M KCl	990, 1059	
	anion-11 ^e	3.88	Fluor			30	0.01 M aq. MES buffer + 5% v/v EtOH, pH 6.0, 0.1 (KCl)	990, 1059	
	anion-13 ^e	2.72	Spec			30	H ₂ O, buffer, 0.1 M KCl	990	

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^d	ref	
K ₄ (1,4-B) ₄ A ₄ 28C4-5	anion-7 ^e	5.45	Fluor			30	0.01 M aq. MES buffer + 5% v/v EtOH, pH 6.0, 0.1 M KCl	990, 1059	
	anion-11 ^e	5.48	Fluor			30	0.01 M aq. MES buffer + 5% v/v EtOH, pH 6.0, 0.1 M KCl	990, 1059	
	anion-13 ^e	5.15	Spec			30	H ₂ O, 0.1 M KCl, pH 6 (0.01 M MES buffer)	990, 1060	
K ₄ (1,4-B) ₄ A ₄ 28C4-6	anion-7 ^e	5.40	Fluor			30	H ₂ O, 0.1 M KCl, pH 8 (0.01 M HEPES buffer)	990, 1060	
	anion-11 ^e	5.67	Fluor			30	H ₂ O, 0.1 M KCl, pH 8 (0.01 M HEPES buffer)	990, 1060	
	anion-14 ^e	5.96	Fluor			30	H ₂ O, 0.1 M KCl, pH 8 (0.01 M HEPES buffer)	990, 1060	
(1,4-B) ₄ T ₄ 28C4-1	anion-7 ^e	3.20	Fluor			?	H ₂ O	1061	
CHART LVI									
Py ₂ A ₆ 28C8-1	SO ₄ ²⁻	3.55(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SO ₄ ²⁻	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SO ₄ ²⁻	2.79(XH ₄ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SO ₄ ²⁻	1.5(XH ₃ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SeO ₄ ²⁻	3.68(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SeO ₄ ²⁻	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SeO ₄ ²⁻	2.69(XH ₄ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
	SeO ₄ ²⁻	1.4(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	814	
Nap ₂ (1,4-B) ₂ 29C4-1	anion-15 ^e	3.13	NMR			20	0.1 M DCl/MeOD-d ₃ (6:4)	1062	
Nap ₂ (1,4-B) ₂ 29C4-2	anion-15 ^e	3.02	NMR			20	0.1 M DCl/MeOD-d ₃ (6:4)	1062	
CHART LVII									
(1,4-B) ₄ 30C4-2	anion-11 ^e	3.63	Fluor			19.5	H ₂ O	1053,1063,1064	
(1,4-B) ₄ A ₄ 30C4-1									
(1,4-B) ₄ A ₄ 30C4-2	⁻ OOC(CH ₂) ₂ COO ⁻	2.80	NMR			?	H ₂ O, pH 5.8-6.0	1065	
	PhSO ₃ ⁻	2.87	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066	
	1,3-(SO ₃) ₂ Ph	2.97	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066	
	anion-7 ^e	3.80	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066-1066	
	anion-11 ^e	4.98	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1069	
	anion-17 ^e	3.30	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070	
	1·(SO ₃)Nap	3.18	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070	
	2·(SO ₃)Nap	4.28	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070	
	1,5·(SO ₃) ₂ Nap	3.64	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070	
	2,6·(SO ₃) ₂ Nap	5.26	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070	
(1,4-B) ₄ A ₄ 30C4-3	anion-7 ^e	4.18	Fluor			25	H ₂ O	1071	
(Guan) ₂ (1,4-B) ₂ 30C8-1	PO ₄ ³⁻	2.2	Pot			20	H ₂ O	1036	
	PO ₄ ³⁻	3.4	Pot			20	MeOH-H ₂ O (9:1)	1036	
CHART LVIII									
A ₁₀ 30C10-1	[Fe(CN) ₆] ⁴⁻	9.03(XH ₃ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	7.92(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	6.23(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	4.78(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Fe(CN) ₆] ⁴⁻	3.69(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	4.43(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	3.66(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	3.23(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	2.37(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	2.10(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	[Co(CN) ₆] ³⁻	2.03(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052	
	(1,4-B) ₄ A ₄ 31C4-1	anion-7 ^e	3.80	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1068
CHART LIX									
Calix8-32C-3	anion-7 ^e	4.99	Fluor			30	H ₂ O	1046	
(1,4-B) ₄ 32C4-1	anion-11 ^e	4.04	Fluor			19.5	H ₂ O	1053	
(1,4-B) ₄ 32C4-2	4·(CH ₂ SO ₃)Ph	3.88	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	1·(SO ₃)Nap	5.54	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	2·(SO ₃)Nap	5.60	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	1,5·(SO ₃) ₂ Nap	5.64	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	2,6·(SO ₃) ₂ Nap	>6.00	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	anion-7 ^e	6.51	Fluor			20	H ₂ O (cation = NH ₄ ⁺)	1063	
	anion-11 ^e	6.70	Fluor			20	H ₂ O (cation = K ⁺)	1063	
	anion-16 ^e	5.15	Fluor			19.5	H ₂ O (cation = Na ⁺)	1063	
	(1,4-B) ₄ A ₄ 32C4-1	anion-7 ^e	4.00	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1068
		anion-7 ^e	4.08	Fluor			25	H ₂ O	1070
Py ₂ (1,4-B) ₄ A ₄ 32C6-1	anion-7 ^e	3.34	Fluor			25	H ₂ O	827	
A ₆ 32C6-1	⁻ OOC(CH ₂) ₂ COO ⁻	3.65(XH ₅ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	⁻ OOC(CH ₂) ₂ COO ⁻	1.20(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	⁻ OOC(CH ₂) ₃ COO ⁻	6.10(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	⁻ OOC(CH ₂) ₃ COO ⁻	5.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	⁻ OOC(CH ₂) ₃ COO ⁻	2.95(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	
	⁻ OOC(CH ₂) ₄ COO ⁻	4.50(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782	

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^d	ref
A ₆ 32C6-2	·OOC(CH ₂) ₂ COO·	3.80(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO·	1.54(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₆ COO·	3.10(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₈ COO·	1.10(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₁₀ COO·	3.20(X ₂ H ₆ L?)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₁₂ COO·	2.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₁₄ COO·	1.90(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₁₆ COO·	2.75(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₁₈ COO·	2.05(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₂₀ COO·	1.35(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₂₂ COO·	3.80(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₂₄ COO·	2.90(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₂₆ COO·	1.50(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₂₈ COO·	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₃₀ COO·	2.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃₂ COO·	2.45(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃₄ COO·	4.30(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₃₆ COO·	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₃₈ COO·	2.55(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₄₀ COO·	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₄₂ COO·	2.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄₄ COO·	2.50(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄₆ COO·	4.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₄₈ COO·	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₅₀ COO·	2.80(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₅₂ COO·	2.30(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₅₄ COO·	1.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₅₆ COO·	1.65(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₅₈ COO·	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₆₀ COO·	2.65(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₆₂ COO·	1.75(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₆₄ COO·	2.25(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₆₆ COO·	1.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₆₈ COO·	1.85(XH ₄ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₇₀ COO·	3.10(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₇₂ COO·	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₇₄ COO·	1.60(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>cis</i> -·OOCCH=CHCOO·	4.30(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	<i>cis</i> -·OOCCH=CHCOO·	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>cis</i> -·OOCCH=CHCOO·	2.30(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>trans</i> -·OOCCH=CHCOO·	4.10(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	<i>trans</i> -·OOCCH=CHCOO·	3.25(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>trans</i> -·OOCCH=CHCOO·	2.50(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl- L-aspartate ²⁻	4.10(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	<i>N</i> -acetyl- L-aspartate ²⁻	3.10(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl- L-aspartate ²⁻	2.30(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl- L-glutamate ²⁻	4.15(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
<i>N</i> -acetyl- L-glutamate ²⁻	3.10(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
<i>N</i> -acetyl- L-glutamate ²⁻	2.30(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
L-(1-glutamyl)- glycinate ²⁻	3.15(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828	
<i>N</i> -acetyl- L-(1-glutamyl)- glycinate ²⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
<i>N</i> -acetyl- L-(1-glutamyl)- glycinate ²⁻	<2(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782	
[Fe(CN) ₆] ⁴⁻	8.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
[Fe(CN) ₆] ⁴⁻	7.8(XH ₆ L)	Pot			25	H ₂ O, 0.1 M KCl	1048	
[Fe(CN) ₆] ³⁻	5.0(XH ₃ L)	CyVol			25	H ₂ O, 0.1 M KCl	1047	
[Fe(CN) ₆] ³⁻	5.8(XH ₆ L)	CyVol			25	H ₂ O, 0.1 M Me ₄ NCl	1047	
[Co(CN) ₆] ³⁻	6.0(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
SO ₄ ²⁻	4.0(XH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
·OOC(CH ₂) ₂ COO·	3.7(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
·OOC(CH ₂) ₄ COO·	3.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
·OOC(CH ₂) ₆ COO·	3.6(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
<i>cis</i> -·OOCCH=CHCOO·	4.1(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
<i>trans</i> -·OOCCH=CHCOO·	2.9(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
anion-9 ^e	3.6(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (anion-9 = squarate ²⁻)	781	
citrate ³⁻	7.6(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
1,3,5-(COO) ₃ Ph	6.1(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
AMP ²⁻	4.1(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781	
AMP ²⁻	3.1(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049	
AMP ²⁻	5.90(X ₂ H ₇ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ²⁺ + H ₇ L ⁷⁺)	1049	
AMP ²⁻	5.55(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ²⁺ + H ₆ L ⁶⁺)	1049	
AMP ²⁻	5.00(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ²⁺ + H ₆ L ⁶⁺)	1049	

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^d	ref
	ADP ³⁻	7.50(XH ₃ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	ADP ³⁻	2.7(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049
	ADP ³⁻	9.15(X ₂ H ₇ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ³⁺ + H ₇ L ⁷⁺)	1049
	ADP ³⁻	8.10(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ³⁺ + H ₆ L ⁶⁺)	1049
	ADP ³⁻	7.00(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ³⁺ + H ₆ L ⁶⁺)	1049
	ATP ⁴⁻	8.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781
	ATP ⁴⁻	4.30(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	781, 1049
	ATP ⁴⁻	11.5(X ₂ H ₇ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ⁴⁺ + H ₇ L ⁷⁺)	1049
	ATP ⁴⁻	9.95(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ⁴⁺ + H ₆ L ⁶⁺)	1049
	ATP ⁴⁻	8.00(X ₂ H ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl (2X ⁴⁺ + H ₆ L ⁶⁺)	1049
CHART LXI								
(1,4-B) ₄ A ₄ 33C4-1	1·(SO ₃ ⁻)Nap	3.58	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070
	2·(SO ₃ ⁻)Nap	3.46	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070
	1,5·(SO ₃ ⁻) ₂ Nap	5.04	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070
	2,6·(SO ₃ ⁻) ₂ Nap	4.52	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070
	anion·7 ^e	4.66	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066
	anion·7 ^e	4.63	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066, 1070
	anion·11 ^e	4.54	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1066
	anion·17 ^e	2.94	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
A ₁₁ 33C11-1	[Fe(CN) ₆] ⁴⁻	8.07(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Fe(CN) ₆] ⁴⁻	6.93(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Fe(CN) ₆] ⁴⁻	5.72(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Fe(CN) ₆] ⁴⁻	4.66(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Fe(CN) ₆] ⁴⁻	3.61(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	5.32(XH ₁₀ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	4.87(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	4.55(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	4.05(XH ₇ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	3.52(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	3.05(XH ₆ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
	[Co(CN) ₆] ³⁻	2.63(XH ₄ L)	Pot			25	H ₂ O, 0.15 M NaClO ₄	1052
(1,4-B) ₄ A ₄ 34C4-2	anion·18 ^e	2.40	NMR			?	40% MeOD-d ₃	1072
	anion·19 ^e	2.35	NMR			?	20% MeOD-d ₃	1072
	anion·19 ^e	2.10	NMR			?	40% MeOD-d ₃	1072
(1,4-B) ₄ A ₄ 34C4-3	cyHexCOO ⁻	1.76	NMR			25	D ₂ O?, <i>I</i> > 0	1073
	cyHexCH ₂ COO ⁻	2.05	NMR			25	D ₂ O?, <i>I</i> > 0	1073
	PhCOO ⁻	2.86	NMR			25	D ₂ O?, <i>I</i> > 0	1073
	PhCH ₂ COO ⁻	2.79	NMR			25	D ₂ O?, <i>I</i> > 0	1073
	1-(COO ⁻)Nap	3.51	NMR			25	D ₂ O	1074
	2-(COO ⁻)Nap	3.86	NMR			25	D ₂ O	1074
	1,8-(COO ⁻) ₂ Nap	4.03	NMR			25	D ₂ O	1074
	2,3-(COO ⁻) ₂ Nap	4.56	NMR			25	D ₂ O	1074
	1-(CH ₂ COO ⁻)Nap	3.68	NMR			25	D ₂ O	1074
	2-(CH ₂ COO ⁻)Nap	3.86	NMR			25	D ₂ O	1074
	2-(O·PO ₃ H ⁻)Nap	3.86	NMR			25	D ₂ O	1074
	1-(O·PO ₃ H ⁻)Nap	3.86	NMR			25	D ₂ O	1074
	1-(O·PO ₃ ²⁻)Nap	3.86	NMR			25	D ₂ O	1074
	2-(O·PO ₃ ²⁻)Nap	4.30	NMR			25	D ₂ O	1074
	2·(SO ₃ ⁻)Nap	4.03	NMR			25	D ₂ O	1074
	2·(SO ₃ ⁻)Nap	4.08	NMR			27	D ₂ O	1075
	anion·7 ^e	5.60	Fluor			25	D ₂ O	1076
	anion·7 ^e	5.60	NMR			27	D ₂ O	1075
	anion·7 ^e	5.55	Fluor			25	H ₂ O	1077
	anion·7 ^e	5.74	Fluor			25	H ₂ O, [L] < 0.001 M	1077
	anion·7 ^e	5.11	Fluor			25	H ₂ O, 0.01 M (various salts)	1077
	anion·7 ^e	4.72	Fluor			25	H ₂ O, 0.1 M NaCl	1077
	anion·7 ^e	3.91	Fluor			25	H ₂ O, 0.1 M NaOH-glycine	1077
	anion·7 ^e	5.11	Fluor			25	Diox·H ₂ O (2:8/v:v)	1077
	anion·7 ^e	4.36	Fluor			25	Diox·H ₂ O (4:6/v:v)	1077
	anion·7 ^e	4.74	Fluor			25	EtOH·H ₂ O (2:8/v:v)	1077
	anion·7 ^e	4.54	Fluor			25	EtOH·H ₂ O (4:6/v:v)	1077
	anion·7 ^e	4.28	Fluor			25	EtOH·H ₂ O (6:4/v:v)	1077
	anion·7 ^e	5.18	NMR			25	MeOD-d ₃ /D ₂ O (3:7/v:v)	1077
	anion·7 ^e	4.52	Fluor			25	MeOD-d ₃ /D ₂ O (5:5)	1076
	anion·7 ^e	4.49	NMR			25	MeOD-d ₃ /D ₂ O (5:5/v:v)	1077
	anion·7 ^e	4.11	Fluor			25	MeOD-d ₃ /D ₂ O (8:2)	1076
	anion·7 ^e	3.98	NMR			25	MeOD-d ₃ /D ₂ O (8:2)	1076
	anion·7 ^e	3.23	NMR			25	MeOD-d ₃ /D ₂ O (8:2/v:v)	1077
	anion·7 ^e	5.34	Fluor			25	MeOH·H ₂ O (1:9/v:v)	1077
	anion·7 ^e	5.18	Fluor			25	MeOH·H ₂ O (2:8/v:v)	1077
	anion·20 ^e	4.32	UV Spec			25	H ₂ O, pH 10	1077
	anion·20 ^e	4.32	UV Spec			25	H ₂ O, 0.02 M NaCl	1077
	anion·20 ^e	4.23	UV Spec			25	H ₂ O, 0.05 M NaCl	1077
	anion·20 ^e	4.08	UV Spec			25	H ₂ O, 0.1 M NaCl	1077
	anion·20 ^e	3.68	UV Spec			25	H ₂ O, 0.5 M NaCl	1077
	anion·20 ^e	3.18	NMR			25	MeOD-d ₃ /D ₂ O (5:5/v:v), pH 10	1077
	anion·20 ^e	2.41	NMR			25	MeOD-d ₃ /D ₂ O (8:2/v:v), pH 10	1077
Cy ₂ (1,4-B) ₄ A ₄ 34C4-1	1·(SO ₃ ⁻)Nap	4.72	Fluor			?	H ₂ O	1066
	2·(SO ₃ ⁻)Nap	4.48	Fluor			?	H ₂ O	1066

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^d	ref
Cy ₂ (1,4-B) ₄ A ₄ 36C4-2	1,5-(SO ₃) ₂ Nap	6.15	Fluor			?	H ₂ O	1066
	2,6-(SO ₃) ₂ Nap ₂	5.51	Fluor			?	H ₂ O	1066
	anion-7 ^e	5.70	Fluor			?	H ₂ O	1066
	1-(SO ₃) ₂ Nap	4.72	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
	2-(SO ₃) ₂ Nap	4.48	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
	1,5-(SO ₃) ₂ Nap	6.15	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
	2,6-(SO ₃) ₂ Nap	5.51	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
	anion-7 ^e	5.70	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
	anion-17 ^e	4.15	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1070
CHART LXI								
(1,4-B) ₄ A ₄ 35C4-1	anion-7 ^e	4.59	Fluor			25	H ₂ O, KCl-HCl buffer, pH 1.95	1068
K ₄ (1,4-B) ₄ (1,3-B) ₂ A ₄ 36C4-1	anion-7 ^e	2.16	Fluor			25	MeOH	1078
K ₄ (1,4-B) ₄ (1,3-B) ₂ A ₄ 36C4-2	anion-7 ^e	2.43	Fluor			25	MeOH	1078
CHART LXII								
(1,4-B) ₄ A ₄ 38C4-1	anion-18 ^e	2.03	NMR			?	40% MeOD-d ₃	1072
A ₆ 38C6-1	CH ₃ (CH ₂) ₂ COO ⁻	<2.0(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OCCOO ⁻	6.30(X ₂ H ₆ L?)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OCCOO ⁻	4.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OCCOO ⁻	2.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OCCCH ₂ COO ⁻	3.25(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	828
	·OCCCH ₂ COO ⁻	3.80(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OCCCH ₂ COO ⁻	2.65(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OCCCH ₂ COO ⁻	2.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OCCCH ₂ COO ⁻	4.05(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OCCCH ₂ COO ⁻	3.05(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OCCCH ₂ COO ⁻	1.95(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₂ COO ⁻	3.00(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₂ COO ⁻	2.35(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₂ COO ⁻	2.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₂ COO ⁻	3.15(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₂ COO ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₂ COO ⁻	<1.2(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO ⁻	2.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₃ COO ⁻	2.45(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO ⁻	3.30(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₃ COO ⁻	2.55(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₃ COO ⁻	1.55(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO ⁻	2.95(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₄ COO ⁻	2.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO ⁻	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₄ COO ⁻	2.55(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₄ COO ⁻	1.45(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₅ COO ⁻	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₅ COO ⁻	2.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₅ COO ⁻	2.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₅ COO ⁻	4.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₅ COO ⁻	3.55(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₅ COO ⁻	2.75(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₆ COO ⁻	3.45(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₆ COO ⁻	3.00(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₆ COO ⁻	2.65(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₆ COO ⁻	4.25(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₆ COO ⁻	3.45(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₆ COO ⁻	2.65(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₇ COO ⁻	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₇ COO ⁻	2.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₇ COO ⁻	2.55(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₇ COO ⁻	3.60(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₇ COO ⁻	3.15(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₇ COO ⁻	2.50(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₈ COO ⁻	3.05(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₈ COO ⁻	2.90(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₈ COO ⁻	2.65(XH ₆ L)	Pot			25	H ₂ O, 0.1 M Me ₄ NCl	782
	·OOC(CH ₂) ₈ COO ⁻	3.50(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	·OOC(CH ₂) ₈ COO ⁻	3.15(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	·OOC(CH ₂) ₈ COO ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl-L-glutamate ²⁻	3.25(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	<i>N</i> -acetyl-L-glutamate ²⁻	2.60(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl-L-glutamate ²⁻	<2(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl-L-aspartate ²⁻	3.35(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828
	<i>N</i> -acetyl-L-aspartate ²⁻	2.60(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl-L-aspartate ²⁻	<2(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	<i>N</i> -acetyl-L-(1-glutamyl)glycinate ²⁻	4.3(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782, 828

TABLE IV (Continued)

ligand	anion ^a	log K ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref
(1,4-B) ₃ A ₆ 42C6-1	N-acetyl-L-(l-glutamyl)-glycinate ²⁻	3.50(XH ₆ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	N-acetyl-L-(l-glutamyl)-glycinate ²⁻	2.40(XH ₄ L)	Pot			25	H ₂ O, 0.01 M Me ₄ NCl	782
	anion ^{7e}	3.04	Fluor			20	H ₂ O, KCl-HCl buffer, pH 1.68	1054
CHART LXVI								
(A ₆ 16C5) ₂ -1	[Fe(CN) ₆] ⁴⁻	6.51(XH ₆ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ⁴⁻	4.35(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	3.62(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	3.70(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	4.70(XH ₆ L)	Pot			25	buffer, pH > 7.5	473
	ATP ⁴⁻	7.27(XH ₆ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	ATP ⁴⁻	5.22(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
(A ₆ 16C5) ₂ -2	ATP ⁴⁻	5.14(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ⁴⁻	6.24(XH ₆ L)	Pot			25	buffer, pH > 7.5	473
	[Fe(CN) ₆] ⁴⁻	4.76(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ³⁻	4.73(XH ₆ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ³⁻	3.38(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	HPO ₄ ²⁻	2.90(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	473
	HPO ₄ ²⁻	3.8(XH ₆ L)	Pot			25	buffer, pH > 7.5	473
(K ₂ A ₆ 16C5) ₂ -1	citrate ³⁻	4.63(XH ₆ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	3.57(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	AMP ²⁻	3.93(XH ₄ L)	Polg			25	H ₂ O, 0.2 M NaClO ₄	473
	AMP ²⁻	7.09(XH ₆ L)	Pot			25	buffer, pH > 7.5	473
	ATP ⁴⁻	5.08(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ⁴⁻	3.90(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	[Fe(CN) ₆] ⁴⁻	2.61(XH ₆ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	HPO ₄ ²⁻	2.07(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	HPO ₄ ²⁻	1.10(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	2.68(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	citrate ³⁻	1.60(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	AMP ²⁻	4.57(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	AMP ²⁻	3.15(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
	ATP ⁴⁻	5.61(XH ₄ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473
ATP ⁴⁻	3.67(XH ₂ L)	Pot			25	H ₂ O, 0.2 M NaClO ₄	473	
CHART LXXII								
A ₆ [2.2.2]-1	SO ₄ ²⁻	7.45(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	SO ₄ ²⁻	5.60(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	SO ₄ ²⁻	4.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	SO ₄ ²⁻	3.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	SO ₄ ²⁻	2.75(XH ₄ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Cl ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Cl ⁻	2.10(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Cl ⁻	1.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Cl ⁻	1.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Br ⁻	2.95(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Br ⁻	2.65(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Br ⁻	2.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	Br ⁻	1.70(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	I ⁻	3.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	I ⁻	3.00(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	I ⁻	2.40(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	I ⁻	1.95(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCCO·	6.55(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCCO·	5.20(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCCO·	4.50(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCCO·	3.25(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCH ₂ COO·	4.00(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
	·OCCCH ₂ COO·	3.10(XH ₇ L)	Pot			25	H ₂ O, 0.1 M TsONa	916
·OCCCH ₂ COO·	2.85(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916	
·OCCCH ₂ COO·	2.20(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	916	
A ₆ [2.2.2]-2	F ₂ H ⁻	5.2(XH ₆ L)	Pot			25	H ₂ O, 0.09 M NaClO ₄ + 0.01 M NaF	917
(1,4-B) ₆ A ₆ [2.2.2]-1	·OOC(CH ₂) ₂ COO·	4.85	NMR			25?	H ₂ O, pH 6.0	1079
	1,4-(COO) ₂ Ph	~4.0	NMR			25?	H ₂ O, pH 6.0	1079
CHART LXXIII								
A ₂ [3.3.1]-1	Cl ⁻	1.7(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080
	Cl ⁻	3.1(XH ₄ L)	ISE			22	MeOH-H ₂ O (9:1)	1080
	Br ⁻	<1.0(XH ₄ L)	ISE			22	pH 1.3 (HNO ₃)	1080
	Br ⁻	1.7(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080
A ₆ [3.3.3]-1							MeOH-H ₂ O (9:1)	1080
	I ⁻	<1.0(XH ₄ L)	ISE			22	pH 1.3 (HNO ₃)	1080
	HCO ₂ ⁻	2.6(XH ₆ L)	NMR			25	H ₂ O, pH 1.5 (HNO ₃)	922
	HCO ₂ ⁻	2.30(XH ₆ L)	Pot			25	H ₂ O	926
	HCO ₂ ⁻	<1.5(XH ₆ L)	Pot			25	H ₂ O, 0.1 M TsONa	926
	N ₃ ⁻	4.6(XH ₆ L)	NMR			25	H ₂ O, 0.1 M TsONa	922
N ₃ ⁻	3.5(XH ₆ L)	NMR			35	H ₂ O	922	

TABLE IV (Continued)

ligand	anion ^a	log K ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	T, °C	conditions ^d	ref	
Sn ₂ [C ₆ .C ₆ .C ₆]-1	Br ⁻	>1	NMR			23	50% CF ₃ CO ₂ D	1038	
	I ⁻	<1.0(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080	
	I ⁻	>1	NMR			23	50% CF ₃ CO ₂ D	1038	
	F ⁻	2.00,2.30	NMR			30	CDCl ₃	1082	
	Cl ⁻	<-2.52	NMR			20	CDCl ₃	1081	
Sn ₂ [C ₇ .C ₇ .C ₇]-1	Cl ⁻	<-2.52	NMR			30	CDCl ₃	1082	
	Cl ⁻	<-2.00	NMR			-50	CDCl ₃	1082	
	Cl ⁻	-0.12	NMR			-60	CDCl ₃	1081	
	Cl ⁻	-0.28	NMR			-50	CDCl ₃	1081	
	Cl ⁻	-0.43	NMR			-40	CDCl ₃	1081	
Sn ₂ [C ₈ .C ₈ .C ₈]-1	Cl ⁻	-0.54;0.52	NMR			20	CDCl ₃	1081	
	Cl ⁻	-0.70	Kin			20	CDCl ₃	1081	
	Cl ⁻	-0.70	NMR			35	CDCl ₃	1081	
	Cl ⁻	-0.89	NMR			50	CDCl ₃	1081	
	Cl ⁻	1.65	Kin			-50	CDCl ₃	1081, 1083	
	Cl ⁻	1.75	Kin			-40	CDCl ₃	1081, 1083	
	Cl ⁻	1.64	Kin			-30	CDCl ₃	1081, 1083	
	Cl ⁻	1.54	Kin			-20	CDCl ₃	1081, 1083	
	Cl ⁻	1.40	Kin			-10	CDCl ₃	1081, 1083	
	Cl ⁻	1.23	Kin			20	CDCl ₃	1081	
Sn ₂ [C ₈ .C ₈ .C ₈]-2	Cl ⁻	1.15	Kin			-10	CDCl ₂ CDCl ₂	1081	
	Cl ⁻	1.18	Kin			20	CDCl ₂ CDCl ₂	1081	
	Cl ⁻	0.85	Kin			30	CDCl ₂ CDCl ₂	1081	
	Cl ⁻	0.69	Kin			50	CDCl ₂ CDCl ₂	1081	
	Cl ⁻	0.53	Kin			70	CDCl ₂ CDCl ₂	1081	
	Cl ⁻	0.41	Kin			90	CDCl ₂ CDCl ₂	1081	
	Br ⁻	-0.52	NMR			20	CDCl ₃	1081	
	Cl ⁻	1.98	Kin			-50	CDCl ₃	1081	
	Cl ⁻	1.93	Kin			-40	CDCl ₃	1081	
	Cl ⁻	1.60	Kin			-30	CDCl ₃	1081	
Sn ₂ [C ₁₀ .C ₁₀ .C ₁₀]-1	Cl ⁻	1.41	Kin			-20	CDCl ₃	1081	
	Cl ⁻	1.34	Kin			0	CDCl ₃	1081	
	Cl ⁻	0.90;1.04	Kin			20	CDCl ₃	1081	
	Cl ⁻	0.75	Kin			50	CDCl ₃	1081	
	Cl ⁻	1.52	Kin			-20	CDCl ₃	1083	
	Br ⁻	0.15	NMR			20	CDCl ₃	1081	
	Cl ⁻	large	Kin			-60	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081	
	Cl ⁻	large	Kin			-40	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081	
	Cl ⁻	2.06	Kin			-20	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081	
	Cl ⁻	1.75	Kin			0	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081	
Sn ₂ [C ₁₀ .C ₁₀ .C ₁₀]-2	Cl ⁻	1.53;1.51	Kin			20	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081	
	Cl ⁻	0.85	Kin			-20	CDCl ₃	1081	
	Cl ⁻	0.60	Kin			20	CDCl ₃	1081	
	Cl ⁻	0.78	Kin			20	CDCl ₃	1081	
	Cl ⁻	0.70	Kin			-50	CDCl ₃	1083	
	Cl ⁻	0.85	Kin			-20	CDCl ₃	1083	
	Cl ⁻	0.48	Kin			20	CDCl ₃	1083	
	Br ⁻	0.40	Kin			-50	CDCl ₃	1081	
	Br ⁻	-0.15	NMR			20	CDCl ₃	1081	
	Br ⁻	-0.15	Kin			20	CDCl ₃	1081	
Sn ₂ [C ₁₂ .C ₁₂ .C ₁₂]-2	Br ⁻	-0.14	Kin			25	CDCl ₃	1081	
	Br ⁻	-0.24	Kin			50	CDCl ₃	1081	
	CHART LXXV								
	[3.3.1.C ₆]-1	Cl ⁻	>4.5(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080
		Br ⁻	1.55(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080
	Br ⁻	3.2(XH ₄ L)	ISE			22	MeOH·H ₂ O (9:1), pH 1.3 (HNO ₃)	1080	
[3.3.1.1]-1	I ⁻	<1.0(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080	
	Cl ⁻	>4.0(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080	
	Br ⁻	<1.0(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080	
	Br ⁻	1.75(XH ₄ L)	ISE			22	MeOH·H ₂ O (9:1), pH 1.3 (HNO ₃)	1080	
[3.3.1.1] ⁺⁺ -2	I ⁻	<1.0(XH ₄ L)	ISE			22	H ₂ O, pH 1.5 (HNO ₃)	1080	
	Cl ⁻	1.0	NMR			25?	H ₂ O, ? M KNO ₃	1035	
	Br ⁻	1.8	NMR			25?	H ₂ O, ? M KNO ₃	1035	
[1.1.1.C ₈ .C ₈] ⁺⁺ -1	Br ⁻	2.7	NMR			25?	95% MeOH, ? M KF	1035	
	Cl ⁻	1.3	NMR			25?	H ₂ O, ? M KNO ₃	1035	
	Br ⁻	2.45	NMR			25?	H ₂ O, ? M KNO ₃	1035	
[1.1.C ₆ .C ₆] ⁺⁺ -2	Br ⁻	3.7	NMR			25?	95% MeOH, ? M KF	1035	
	I ⁻	2.2	NMR			25?	H ₂ O, ? M KF	1035	
	I ⁻	3.1	NMR			25?	95% MeOH, ? M KF	1035	
	Cl ⁻	1.7	Pot			25	H ₂ O, 0.1 M TsONa	1084	
	Cl ⁻	3.27	Pot			25	95% MeOH, 0.1 M TsONa	1084	
	Br ⁻	3.01	Pot			25	H ₂ O, 0.1 M TsONa	1064, 1085	
	Br ⁻	4.71	Pot			25	95% MeOH, 0.1 M TsONa	1084	
	I ⁻	2.7	Pot			25	H ₂ O, 0.1 M TsONa	1084, 1085	
	I ⁻	4.96	Pot			25	95% MeOH, 0.1 M TsONa	1084	
	HCO ₃ ⁻	1.76	Pot			25	H ₂ O, 0.1 M TsONET ₄	1084	
CO ₃ ²⁻	2.36	Pot			25	H ₂ O, 0.1 M TsONa	1084		
HPO ₄ ²⁻	2.54	Pot			25	H ₂ O, 0.1 M TsONa	1084, 1085		
H ₂ PO ₄ ⁻	2.1	Pot			25	H ₂ O, 0.1 M TsONa	1084, 1085		
HCOO ⁻	1.34	Pot			25	H ₂ O, 0.1 M TsONET ₄	1084		
CH ₃ COO ⁻	1.86	Pot			25	H ₂ O, 0.1 M TsONET ₄	1084		
4-NO ₂ PhO ⁻	<0.7	Spec			26	H ₂ O, 1 M Tris·TsO ⁻ , pH 8.6, I = 0.22	1084, 1085		
4-NO ₂ PhOPO ₃ ²⁻	2.11	Pot			25	H ₂ O, 0.1 M TsONa	1084		

TABLE IV (Continued)

ligand	anion ^a	log <i>K</i> ^b	method ^c	ΔH , kJ/mol	ΔS , J/K·mol	<i>T</i> , °C	conditions ^d	ref	
[1.1.C ₈ .C ₈] ⁴⁺ -1	glucose-1-phosphate ²⁻	2.24	Pot			25	H ₂ O, 0.1 M TsONa	1084	
	glucose-6-phosphate ²⁻	2.2	Pot			25	H ₂ O, 0.1 M TsONa	1084	
	AMP ²⁻	1.99	Pot			25	H ₂ O, 0.1 M TsONa	1084	
	ATP ⁴⁻	2.46	Pot			25	H ₂ O, 0.1 M TsONa	1084, 1085	
	NAD ⁻	2.08	Pot			25	H ₂ O, 0.1 M TsONa	1084	
	Cl ⁻	<0.5	NMR			25?	H ₂ O, ? M KF	1035	
	Br ⁻	2.45	NMR			25?	H ₂ O, ? M KF	1035	
	Br ⁻	3.9	NMR			25?	95% MeOH, ? M KF	1035	
	I ⁻	2.4	NMR			25?	H ₂ O, ? M KF	1035	
	I ⁻	5.0	NMR			25?	95% MeOH, ? M KF	1035	
	anion-21 ^e	2.32	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086	
	anion-22 ^e	2.75	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086	
	anion-23 ^e	2.68	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086	
	anion-24 ^e	3.02	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086	
	anion-25 ^e	1.79	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086	
[1.1.C ₈ .C ₆] ⁴⁺ -2	N ₃ ⁻	1.90	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	SCN ⁻	2.91	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	Br ⁻	2.0	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.02	1084	
	Br ⁻	2.03	Pot			25	H ₂ O, 0.55 M Na-Glucuronate	1084, 1085	
	I ⁻	2.46	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084, 1085	
	PhCOO ⁻	0.44	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	1,2-(COO ⁻) ₂ Ph	0.91	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	4-NO ₂ PhO ⁻	2.25	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084, 1085	
	2,4-(NO ₂) ₂ PhO ⁻	2.36	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	2,4-(NO ₂) ₂ PhO ⁻	2.68	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.02	1084	
	HPO ₄ ²⁻	0.32	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084, 1085	
	HA ₃ O ₄ ²⁻	<0.15	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	ICH ₂ COO ⁻	1.99	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	AMP ²⁻	1.04	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	ATP ⁴⁻	1.40	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	ATP ⁴⁻	1.92	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.02	1084, 1085	
	3,5-diiodo-tyrosine ²⁻	1.14	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	<i>N</i> -acetyl-tryptophan ⁻	<0.7	Spec			26	H ₂ O, 1 M Tris-Fluoride pH 8.6, <i>I</i> = 0.22	1084	
	Sn ₄ [C ₆ .C ₆ /C ₆ .C ₆]-1	Cl ⁻	2.70	NMR			20	CDCl ₃	1087
	CHART LXXXVI								
	[1.1.C ₈ .C ₆][1.1.C ₈ .C ₆]-1	anion-21 ^e	2.85	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086
		anion-22 ^e	3.31	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086
		anion-23 ^e	3.72	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086
		anion-24 ^e	4.00	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086
		anion-25 ^e	2.51	Photometry			27	H ₂ O, pH 8.8 (buffer)	1086
CHART LXXXVIII									
Azacyclophane-1	anion-7 ^e	3.30	Fluor			25	MeOH, buffer, pH 1	1078	
Azacyclophane-3	anion-7 ^e	4.2	NMR			25?	D ₂ O·DCl, pD 1.2	1088	
CHART LXXXIX									
Azacyclophane-4	anion-7 ^e	4.0	NMR			25?	D ₂ O·DCl, pD 1.2	1088	
Azacyclophane-5	1-(SO ₃)Nap	2.00	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	2-(SO ₃)Nap	2.18	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	1,5-(SO ₃) ₂ Nap	2.00	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	2,6-(SO ₃) ₂ Nap	2.18	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	2,7-(SO ₃) ₂ Nap	3.15	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	anion-7 ^e	4.00	Fluor			30	H ₂ O, 0.1 M KCl, pH 3 (0.01 M acetate buffer)	990, 1089	
	anion-7 ^e	5.20	Fluor			30	H ₂ O, pH 4 (buffer)	989	
	anion-11 ^e	4.48	Fluor			30	H ₂ O, 0.1 M KCl, pH 3 (0.01 M acetate buffer)	990, 1089	
	Azacyclophane-6	anion-7 ^e	4.23	Fluor			30	H ₂ O, buffer, 0.1 M KCl	990, 1090
		anion-11 ^e	3.96	Fluor			30	H ₂ O, buffer, 0.1 M KCl	990, 1090

^a ADP = adenosine diphosphate, AMP = adenosine monophosphate, ATP = adenosine triphosphate, cyHex = cyclohexyl, NAD = nicotinamide adenine dinucleotide, Nap = naphthyl, Ph = phenyl, PhO⁻ = phenoxide. ^b Reactions: The log *K* values are for 1:1 interactions unless consecutive reactions occur. Interactions of the 1:1 type are either of the anion-ligand type (anion-*L*, no further designation) or of the anion protonated-ligand type (indicated by XHL, etc., placed in parentheses following the log *K* value; X = anion). Some log *K* values are reported for the interaction of X with XL or XHL, etc., to form X₂L or X₂HL, etc. Where these occur, the reaction is indicated by placing the reaction product (X₂L, X₂HL, etc.) in parentheses after the log *K* value. When no complexation between anion and ligand occurs, it is denoted by 'none'; 'nm' means the log *K* values are too small to be measured. ^c Methods: see footnote b in Table I. ^d Conditions: see footnote c in Table I. * See Charts LXXXII and LXXXIII.

TABLE V. Kinetic Parameters for Cation-Macrocycle Interaction in Solution

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	ΔH^{*o} kJ/mol	ΔS^{*o} J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
CHART I									
A ₂ 8C2-2	Co ²⁺	1.3x10 ⁻⁴		40.6	-92.0	Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 6.0-7.2 (buffered)	47
	Co ²⁺		0.33	31.8(d)	-146(d)	Spec	25	H ₂ O, I = 0.5 (KNO ₃), ($k_d = k_H$)	47
	Co ²⁺		640	28.9(d)	-142(d)	Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 1.4 (buffered) ($k_d = k_H$)	47
	Co ²⁺		(0.33 + 640[H ⁺]) x[CoL]			Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 1.4 (buffer), [CoL] = 5x10 ⁻⁴ -1x10 ⁻³ M ($k_d = (k+k_H[H^+])[CoL]$)	47
	Ni ²⁺	4.1x10 ⁻⁶		69.5	-28.5	Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 6.0-7.2 (buffered)	47
	Ni ²⁺		2.1x10 ⁻⁴	56.5(d)	-151(d)	Spec	25	H ₂ O, I = 0.5 (KNO ₃), ($k_d = k$)	47
	Ni ²⁺		0.33	49.0(d)	-113(d)	Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 1.4 (buffered) ($k_d = k_H$)	47
	Ni ²⁺		(2.1x10 ⁻⁴ + 0.33[H ⁺]) x[NiL]			Spec	25	H ₂ O, I = 0.5 (KNO ₃), pH 1.4 (buffered), [NiL] = 5x10 ⁻⁴ -1x10 ⁻³ M ($k_d = (k+k_H[H^+])[NiL]$)	47
A ₃ 9C3-1	Cu ²⁺	6.8x10 ⁸ (CuHL)		57.3	79.5	Spec	25	H ₂ O, 0.2 M NaClO ₄ , pH 3.6-4.6 (acetate buffer), [Cu(O ₂ CCH ₃) ⁺ + HL ⁺]	51
	Cu ²⁺		51	34	-68	Spec	25	H ₂ O, I = 1.0 (NaNO ₃), 0.025-0.5 M HNO ₃ , ($k_d = k_H$)	1093
	Cu ²⁺	2.4x10 ⁸ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + HL ⁺)	54
	Cu ²⁺	1.0x10 ⁷ (CuXL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (CuCH ₃ CO ₂ + HL ⁺)	54
	Cu ²⁺		34			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 0.5 (HNO ₃)	54
	Cu ²⁺		5.20			Spec	16.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.2 M	1094
	Cu ²⁺		7.85			Spec	16.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.3 M	1094
	Cu ²⁺		9.29			Spec	16.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.4 M	1094
	Cu ²⁺		11.5			Spec	16.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.5 M	1094
	Cu ²⁺		12.3			Spec	16.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.6 M	1094
	Cu ²⁺		4.88			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.2 M	1094
	Cu ²⁺		6.94			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.3 M	1094
	Cu ²⁺		9.05			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.4 M	1094
	Cu ²⁺		10.3			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.5 M	1094
	Cu ²⁺		11.5			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.6 M	1094
	Cu ²⁺		12.3			Spec	18	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.7 M	1094
	Cu ²⁺		6.82			Spec	22.8	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.2 M	1094
	Cu ²⁺		9.70			Spec	22.8	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.3 M	1094
	Cu ²⁺		12.8			Spec	22.8	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.4 M	1094
	Cu ²⁺		15.3			Spec	22.8	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.5 M	1094
	Cu ²⁺		16.5			Spec	22.8	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.6 M	1094
	Cu ²⁺		6.96			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.2 M	1094
Cu ²⁺		10.6			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.3 M	1094	
Cu ²⁺		12.9			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.4 M	1094	
Cu ²⁺		13.9			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.5 M	1094	
Cu ²⁺		14.7			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.6 M	1094	
Cu ²⁺		15.8			Spec	24.6	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.7 M	1094	
Cu ²⁺		8.45			Spec	25.5	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.2 M	1094	
Cu ²⁺		15.0			Spec	25.5	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.4 M	1094	
Cu ²⁺		18.0			Spec	25.5	H ₂ O, I = 0.5 (LiCl), [H ⁺] = 0.6 M	1094	

Table V (Continued)

ligand	cation	k_f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K·mol	method ^b	T , °C	conditions ^c	ref
	Cu ²⁺		20.7			Spec	25.5	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.8 M	1094
	Cu ²⁺		19.6			Spec	25.5	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 1.0 M	1094
	Cu ²⁺		8.80			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.2 M	1094
	Cu ²⁺		14.1			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.3 M	1094
	Cu ²⁺		17.6			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.4 M	1094
	Cu ²⁺		19.1			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.5 M	1094
	Cu ²⁺		20.0			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.6 M	1094
	Cu ²⁺		20.3			Spec	29.8	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.7 M	1094
	Cu ²⁺		11.4			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.2 M	1094
	Cu ²⁺		17.2			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.3 M	1094
	Cu ²⁺		19.3			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.4 M	1094
	Cu ²⁺		22.6			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.5 M	1094
	Cu ²⁺		24.8			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.6 M	1094
	Cu ²⁺		26.4			Spec	33	H ₂ O, $I = 0.5$ (LiCl), [H ⁺] = 0.7 M	1094
A ₃ 9C3-2	Cu ²⁺		26	40	-85	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ ($k_d = k_H$)	85a
A ₃ 9C3-5	Ce ³⁺	6.3x10 ⁷				Spec	25	H ₂ O, 0.1 M NaCl (CeHL + OH ⁻ → CeL + H ₂ O)	67
	Ce ³⁺		2.5x10 ⁻⁶ + 4.3x10 ⁻² [H ⁺]			Spec	25	H ₂ O, 0.1 M NaCl, Zn ²⁺ as scavenger, pH 2-4 ($k_d = k + k_H[H^+]$)	67
	Gd ³⁺	7.1x10 ⁷				Spec	25	H ₂ O, 0.1 M NaCl (GdHL + OH ⁻ → GdL + H ₂ O)	67
	Gd ³⁺		8.3x10 ⁻⁶ + 2.3x10 ⁻² [H ⁺]			Spec	25	H ₂ O, 0.1 M NaCl, Cu ²⁺ as scavenger, pH 2-4 ($k_d = k + k_H[H^+]$)	67
	Er ³⁺	5.5x10 ⁷				Spec	25	H ₂ O, 0.1 M NaCl (ErHL + OH ⁻ → ErL + H ₂ O)	67
	Er ³⁺		2.7x10 ⁻⁶ + 1.6x10 ⁻³ [H ⁺]			Spec	25	H ₂ O, 0.1 M NaCl, Cu ²⁺ as scavenger, pH 2-4 ($k_d = k + k_H[H^+]$)	67
A ₃ 10C3-1	Cu ²⁺		17	43	-78	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , ($k_d = k_H$)	1093
	Cu ²⁺	7.4x10 ⁴ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + HL ⁺)	54
	Cu ²⁺	8.6x10 ⁶ (CuXL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (CuCH ₃ COO ⁻ + HL ⁺)	54
	Cu ²⁺		13			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 0.5 (HNO ₃)	54
A ₃ 11C3-1	Cu ²⁺		67	45	-48	Spec	7	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ ($k_d = k$)	85a
	Cu ²⁺		110			Spec	14.7	H ₂ O, $I = 1.0$ (NaNO ₃), [H ⁺] < 0.2 M	85a
	Cu ²⁺		250			Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), [H ⁺] < 0.2 M	85a
A ₃ 11C3-2	Cu ²⁺		5.6	45	-79	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , ($k_d = k_H$)	1093
A ₃ 12C3-1	Cu ²⁺		45	31	-110	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ ($k_d = k$)	85a
A ₃ 12C3-2	Cu ²⁺	23(CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (Cu ²⁺ + HL ⁺)	54
	Cu ²⁺	2.8x10 ⁸ (CuXL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (CuCH ₃ COO ⁻ + HL ⁺)	54
	Cu ²⁺		21			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 2.5 (HNO ₃)	54

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺		6.2			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 2.54, 2.88 (ClCH ₂ COOH)	54
	Cu ²⁺		2.2			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 3.22, 3.46 (HCOOH)	54
	Cu ²⁺		0.74			Spec	25	H ₂ O, 0.5 M KNO ₃ , pH 3.57, 3.73 (CH ₃ COOH)	54
	Cu ²⁺		21	57	-28	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , (CuHL ³⁺ → Cu ²⁺ + HL ⁺)	1093
A ₃ 12C3-3	Cu ²⁺		2.0x10 ⁻³	67	-74	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , ($k_d = k_H$)	1093
	Cu ²⁺		1.8x10 ⁻⁴	85	85	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , (CuHL ³⁺ → Cu ²⁺ +HL ⁺)	1093
	Cu ²⁺		2.0x10 ⁻³ 1.8x10 ⁻⁴ [H ⁺]			Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , ($k_d = k + k_H[H^+]$)	1093
CHART II									
12C4-1	Li ⁺ , AsF ₆ ⁻	1.9x10 ⁷	5.5x10 ⁸			US	25	DME	97
	Li ⁺	2.4x10 ¹⁰	5.7x10 ⁸			US	25	1,3-Dioxolane (anion = ClO ₄ ⁻), [step 1: Li ⁺ + L = Li ⁺ ...L]	98
	Li ⁺	3.0x10 ⁷	6.6x10 ⁸			US	25	1,3-Dioxolane (anion = ClO ₄ ⁻), [step 2&3: Li ⁺ ...L = (LiL) ⁺]	98
	Li ⁺		6.9x10 ⁸			US	25	1,3-Dioxolane (anion = AsF ₆ ⁻), [step 1: Li ⁺ + L = Li ⁺ ...L]	291
	Li ⁺	<<7.5x10 ⁸	7.5x10 ⁸			US	25	1,3-Dioxolane (anion = AsF ₆ ⁻), [step 2&3: Li ⁺ ...L = (LiL) ⁺]	291
CHART III									
A ₄ 12C4-4	Ce ³⁺	1.7x10 ⁻⁸	8x10 ⁻⁴ [H ⁺] ⁺ 2x10 ⁻³ [H ⁺] ²			Spec	25	H ₂ O, $I = \text{constant}$ (3 M NaClO ₄ + HClO ₄), buffered for formation [H ⁺] = 0.1-2.0 M for dissociation	168 1095 1095 1095 1095
	Pb ²⁺		~1.3x10 ²			Spec	25	H ₂ O, [H ⁺] = 0.05 M	1095
	Pb ²⁺		~2.0x10 ²			Spec	25	H ₂ O, [H ⁺] = 0.1 M	1095
	Pb ²⁺		~3.2x10 ²			Spec	25	H ₂ O, [H ⁺] = 0.2 M	1095
	Pb ²⁺		~3.8x10 ²			Spec	25	H ₂ O, [H ⁺] = 0.3 M	1095
	Pb ²⁺		~4.4x10 ²			Spec	25	H ₂ O, [H ⁺] = 0.4 M	1095
K ₂ A ₄ 12C4-1	Ni ²⁺	9.3x10 ⁷ [H ⁺] ² /(3.9x 10 ⁻⁶ + [H ⁺]+6.9x10 ⁻² + 2.7x10 ⁻¹¹ /[H ⁺])				Spec	25	H ₂ O, 0.5 M KNO ₃ , 0.05 M buffer pH 5.5-8.5 (dissociation), pH 8.5-10.5 (formation)	177
A ₃ T12C4-1	Co ²⁺	4.97x10 ⁻²				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 4.78	180
	Co ²⁺	8.29x10 ⁻²				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 5.19	180
	Co ²⁺	1.54x10 ⁻¹				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 5.55	180
	Co ²⁺	6.25x10 ⁻²				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.05 M acetate buffer, pH 5.55	180
AT ₂ 12C4-1	Cu ²⁺		6.9x10 ⁻²			Spec	25	H ₂ O, [H ⁺] = 2.4x10 ⁻³ M	182
A ₃ 13C3-2	Cu ²⁺		15	63	-19	Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃), 0.025-0.5 M HNO ₃ , (CuHL ³⁺ → Cu ²⁺ + HL ⁺)	1093
A ₄ 13C4-2	Co ²⁺	(1.4x10 ⁻⁹ /[H ⁺] +2.4x10 ⁻¹⁶ /[H ⁺] ²) x[Co ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Ni ²⁺	(8.7x10 ⁻⁹ /[H ⁺] x[Ni ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Cu ²⁺	(9.6x10 ⁻⁴ /[H ⁺] x[Cu ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Zn ²⁺	(6.4x10 ⁻⁹ /[H ⁺] +2.8x10 ⁻¹¹ /[H ⁺] ²) x[Zn ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-3	Ni ²⁺	(6.8x10 ⁻⁹ /[H ⁺] x[Ni ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Cu ²⁺	(8.0x10 ⁻⁴ /[H ⁺] x[Cu ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-4	Ni ²⁺	(3.6x10 ⁻⁹ /[H ⁺] x[Ni ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Cu ²⁺	(8.3x10 ⁻⁴ /[H ⁺] x[Cu ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
A ₄ 13C4-5	Co ²⁺	(9.0x10 ⁻¹⁰ /[H ⁺] +2.7x10 ⁻¹⁶ /[H ⁺] ²) x[Co ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Ni ²⁺	(3.6x10 ⁻¹⁰ /[H ⁺] x[Ni ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	(1.8x10 ⁻⁶ /[H ⁺]) x[Cu ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
	Zn ²⁺	(7.2x10 ⁻⁷ /[H ⁺]) +7.3x10 ⁻¹³ /[H ⁺] ²) x[Zn ²⁺][H ₂ L ²⁺]				Pot	25	H ₂ O, 0.5 M KCl	199
CHART IV									
K ₂ A ₄ 13C4-1	Cu ²⁺	2.0x10 ⁷				Spec	25	H ₂ O, 0.2 M NaClO ₄ , 4.8 < pH < 5.7 (acetate buffer)	203
	Cu ²⁺	9.5x10 ² (CuHL)				Spec	25	[Cu(O ₂ CCH ₃) ⁺ + L] H ₂ O, 0.2 M NaClO ₄ , 4.8 < pH < 5.7 (acetate buffer)	203
A ₃ 14C3-1	Cu ²⁺		50	56	-35	Spec	25	[Cu(O ₂ CCH ₃) ⁺ + HL ⁺] H ₂ O, I = 1.0 (NaNO ₃), 0.025-0.5 M HNO ₃ (k _d = k)	85a 219
PyA ₃ 14C4-2	Co ²⁺	3.5x10 ⁸				Pot	25	H ₂ O, 0.5 M KCl	219
	Co ²⁺	47(CoHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Ni ²⁺	9.3(NiHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Ni ²⁺	2.9x10 ⁻⁸ (NiH ₂ L)				Pot	25	H ₂ O, 0.5 M KCl	219
	Cu ²⁺	2.3x10 ⁶ (CuHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Cu ²⁺	29(CuH ₂ L)				Pot	25	H ₂ O, 0.5 M KCl	219
	Zn ²⁺	4.2x10 ⁸ (ZnHL)				Pot	25	H ₂ O, 0.5 M KCl	219
PyA ₃ 14C4-3	Zn ²⁺	0.42(ZnH ₂ L)				Pot	25	H ₂ O, 0.5 M KCl	219
	Co ²⁺	5.2x10 ⁸				Pot	25	H ₂ O, 0.5 M KCl	219
	Co ²⁺	25(CoHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Ni ²⁺	2.6(NiHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Ni ²⁺	13.0(NiHL)				Pot	40	H ₂ O, 0.5 M KCl	219
	Cu ²⁺	1.2x10 ⁶ (CuHL)				Pot	25	H ₂ O, 0.5 M KCl	219
	Cu ²⁺	22(CuH ₂ L)				Pot	25	H ₂ O, 0.5 M KCl	219
	Zn ²⁺	2.6x10 ⁸ (ZnHL)				Pot	25	H ₂ O, 0.5 M KCl	219
K ₂ PyA ₃ 14C4-1	Zn ²⁺	0.19(ZnH ₂ L)				Pot	25	H ₂ O, 0.5 M KCl	219
	Cu ²⁺	1.5[Cu ²⁺][L]	3.3x10 ⁻² [H ⁺]/ (5.9+[H ⁺])			Spec	25	H ₂ O, 0.5 M KNO ₃ , 0.05 M buffer pH 5.0-5.8 (formation), pH? (dissociation)	177
CHART V									
A ₄ 14C4-1	Co ²⁺	2.2x10 ⁴ (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (Co ²⁺ + HL)	1096
	Co ²⁺	2.6x10 ⁴ (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (CoL' + HL)	1096
	Co ²⁺	1.5x10 ⁶ (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = glycolate), (CoL' + HL)	1096
	Co ²⁺	1.6x10 ⁶ (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = malonate), (CoL' + HL)	1096
	Co ²⁺	2.0x10 ⁴ (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (CoL ₂ ' + HL)	1096
	Co ²⁺	20 (CoL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (CoL' + H ₂ L)	1096
	Ni ²⁺		t(1/2)> 100 min ~1x10 ⁻⁹			Spec	10	H ₂ O, 1.4 M HClO ₄	1097
	Ni ²⁺					Calc'd	25	H ₂ O, 1.0 M HClO ₄	1098
	Ni ²⁺	196(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = F'), (NiL' + HL)	1099
	Ni ²⁺	157(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = acetate), (NiL' + HL)	1099
	Ni ²⁺	340(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = glycolate), (NiL' + HL)	1099
	Ni ²⁺	260(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = oxalate), (NiL' + HL)	1099
	Ni ²⁺	363(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = oxalate), (NiL ₂ ' + HL)	1099
	Ni ²⁺	501(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = malonate), (NiL' + HL)	1099
	Ni ²⁺	820(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = succinate), (NiL' + HL)	1099
	Ni ²⁺	590(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = methanetriacetate), (NiL' + HL)	1099

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K-mol	method ^b	T, °C	conditions ^c	ref
	Ni ²⁺	0.15(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = methanetriacetate), (NiL' + H ₂ L)	1099
	Ni ²⁺	610(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = cis,cis-1,3,5- cyclohexanetricarboxylate), (NiL' + HL)	1099
	Ni ²⁺	0.16(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = cis,cis-1,3,5- cyclohexanetricarboxylate), (NiHL' + H ₂ L)	1099
	Ni ²⁺	0.28(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = tricarallylate), (NiL' + H ₂ L)	1099
	Ni ²⁺	139(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (NiL' + HL)	1099
	Ni ²⁺	54(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (NiL ₂ ' + HL)	1099
	Ni ²⁺	195(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = glicynate), (NiL' + HL)	1099
	Ni ²⁺	55(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = iminodiacetate), (NiL' + HL)	1099
	Ni ²⁺	75(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = nitrilotriacetate), (NiL' + HL)	1099
	Ni ²⁺	131(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = nitrilotriacetate), (NiL' + L)	1099
	Ni ²⁺	2.2(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = N,N'-ethylenediimino- diacetate), (NiL' + HL)	1099
	Ni ²⁺	63(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = N,N'-ethylenediimino- diacetate), (NiL' + L)	1099
	Ni ²⁺	75(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = NH ₃), (NiL' + L)	1099
	Ni ²⁺	27(NiL)				Pot	25	H ₂ O, 0.5 M KNO ₃ (L' = pyridine), (NiL' + L)	1099
	Ni ²⁺	75(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = ethylenediamine), (NiL' + L)	1099
	Ni ²⁺	43(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = propanediamine), (NiL' + L)	1099
	Ni ²⁺	33(NiL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = diethylenetriamine), (NiL' + L)	1099
	Ni ²⁺	3.3x10 ⁻³				Spec	25	H ₂ O, 0.5 M KCl, 0.2 M buffer	1100
	Ni ²⁺	9.3x10 ⁻¹⁰				Spec	25	H ₂ O, 0.5 M KCl, 0.2 M buffer	1100
	Ni ²⁺	1.3x10 ⁻²				Spec	40	H ₂ O, 0.5 M KCl, 0.2 M buffer	1100
	Ni ²⁺	4.0x10 ⁻⁹				Spec	40	H ₂ O, 0.5 M KCl, 0.2 M buffer	1100
	Cu ²⁺		1.5			Spec	10	H ₂ O, 1.4 M HClO ₄	1097
	Cu ²⁺		2.6			Spec	20	H ₂ O, 1.4 M HClO ₄	1097
	Cu ²⁺	5.3x10 ⁶		70.7	121	Spec	25	H ₂ O, 0.2 M NaClO ₄ , pH 4.2-5.0 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + HL ⁺]	51
	Cu ²⁺	8.1		68.2	0	Spec	25	H ₂ O, 0.2 M NaClO ₄ , pH 4.2-5.0 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + H ₂ L ²⁺]	51
	Cu ²⁺	8.0x10 ⁶				Polg	25	H ₂ O, 0.2 M NaClO ₄ , pH 1.8-2.5 (unbuffered)	51
	Cu ²⁺	7.6x10 ⁻²⁶				Polg	25	H ₂ O, 0.2 M NaClO ₄ , pH 1.8-2.5 (unbuffered)	51
	Cu ²⁺	2.6x10 ⁶				Pot	25	H ₂ O, 0.5 M KCl	1101
	Cu ²⁺	0.62x10 ⁻⁴	2.78x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.2 M HNO ₃), [step 1: CuL ²⁺ -> CuHL ³⁺]	1102
	Cu ²⁺		5.22x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.2 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	1.30x10 ⁻⁴	2.78x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.4 M HNO ₃), [step 1: CuL ²⁺ -> CuHL ³⁺]	1102
	Cu ²⁺		5.32x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.4 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ +H ₄ L ⁴⁺]	1102

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/Kmol	method ^b	T, °C	conditions ^c	ref
	Cu ²⁺	1.50x10 ⁻⁴	2.77x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.5 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.35x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	1.82x10 ⁻⁴	2.75x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.6 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.41x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.6 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	2.20x10 ⁻⁴	2.76x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.7 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.44x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.7 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	2.49x10 ⁻⁴	2.76x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.8 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.49x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.8 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	2.83x10 ⁻⁴	2.76x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.9 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.50x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 0.9 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	3.15x10 ⁻⁴	2.78x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 1.0 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.52x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 1.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	4.70x10 ⁻⁴	2.77x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 1.5 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		5.88x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 1.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	6.24x10 ⁻⁴	2.75x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 2.0 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		6.17x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 2.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	7.80x10 ⁻⁴	2.75x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 2.5 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		6.32x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 2.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	9.41x10 ⁻⁴	2.76x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 3.0 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		6.52x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 3.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	10.9x10 ⁻⁴	2.76x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 3.5 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		6.74x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 3.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	12.3x10 ⁻⁴	2.77x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 4.0 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		6.86x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 4.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	14.2x10 ⁻⁴	2.77x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 4.5 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		7.42x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 4.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1102
	Cu ²⁺	16.2x10 ⁻⁴	2.75x10 ⁻³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 5.0 M HNO ₃), [step 1: CuL ²⁺ → CuHL ³⁺]	1102
	Cu ²⁺		7.66x10 ⁻⁴			Spec	25	H ₂ O, I = 5 (NaNO ₃ + 5.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1102

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	3.15x 10 ⁴ [H ⁺]	2.76x10 ³			Spec	25	H ₂ O, I = 5 (NaNO ₃ + HNO ₃), [step 1: CuL ²⁺ ·→ CuHL ³⁺], [H ⁺]=0.2-5.0 M	1102
	Cu ²⁺		5.1x10 ⁻⁴⁺ 4.91x10 ⁻⁵ [H ⁺]			Spec	25	H ₂ O, I = 5 (NaNO ₃ + HNO ₃), [step 2: CuHL ³⁺ ·→ Cu ²⁺ + H ₄ L ⁴⁺], [H ⁺] = 0.2-5.0 M	1102
	Cu ²⁺	18x10 ⁸ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = glycolate), (CuL' + HL)	1103
	Cu ²⁺	5.3x10 ⁸ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = malonate), (CuL' + HL)	1103
	Cu ²⁺	14.4 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = malonate), (CuL' + H ₂ L)	1103
	Cu ²⁺	56x10 ⁶ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = succinate), (CuL' + HL)	1103
	Cu ²⁺	48 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = succinate), (CuL' + H ₂ L)	1103
	Cu ²⁺	7.1x10 ⁸ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = picolinate), (CuL' + HL)	1103
	Cu ²⁺	5.2x10 ⁶ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = glycinate), (CuL' + HL)	1103
	Cu ²⁺	3.7x10 ⁸ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = iminodiacetate), (CuL' + HL)	1103
	Cu ²⁺	3.7x10 ⁵				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = iminodiacetate), (CuL ₂ ' + HL)	1103
	Cu ²⁺	8.5x10 ⁴				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = nitrilotriacetate), (CuL' + HL)	1103
	Cu ²⁺	4.3 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = N-(2-hydroxyethyl) ethylenediaminetriacetate), (CuL' + HL)	1103
	Cu ²⁺	78 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = N-(2-hydroxyethyl) ethylenediaminetriacetate), (CuL' + L)	1103
	Cu ²⁺	7.1x10 ⁶ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = ethylenediamine), (CuL' + L)	1103
	Cu ²⁺	3.9x10 ⁶ (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = 1,3-diaminopropane), (CuL' + L)	1103
	Cu ²⁺	131 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = 1,3-diaminopropane), (CuL ₂ ' + HL)	1103
	Cu ²⁺	4.5x10 ² (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = diethylenetriamine), (CuL' + HL)	1103
	Cu ²⁺	91 (CuL)				Spec	25	H ₂ O, 0.5 M KNO ₃ (L' = bis(3-aminopropyl) amine), (CuL' + HL)	1103
A ₄ 14C4-2	Ni ²⁺	2.5x10 ⁻⁹				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺	1.2x10 ⁻⁸				Spec	40	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺	55 (NiHL)				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Cu ²⁺	5.3x10 ⁻⁴				Pot	25	H ₂ O, 0.5 M KCl	232
	Cu ²⁺	1.2x10 ⁷ (CuHL)				Pot	25	H ₂ O, 0.5 M KCl	232
A ₄ 14C4-3	Ni ²⁺	1.3x10 ⁻⁹				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺	7.6x10 ⁻⁹				Spec	40	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺	10 (NiHL)				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Cu ²⁺	3.6x10 ⁻⁴				Pot	25	H ₂ O, 0.5 M KCl	232
	Cu ²⁺	2.8x10 ⁶ (CuHL)				Pot	25	H ₂ O, 0.5 M KCl	232
A ₄ 14C4-4	Co ²⁺	16(CoHL)				Pot	25	H ₂ O, 0.5 M KNO ₃	234
	Co ²⁺		2.5(CoHL)			Spec	25	H ₂ O, 0.5 M KNO ₃ (HNO ₃ catalyzed)	234
	Ni ²⁺	6.3x10 ⁻¹⁰				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺	3.1x10 ⁻⁹				Spec	40	H ₂ O, 0.5 M KCl, buffered	232

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Ni ²⁺	1.4(NiHL)				Spec	25	H ₂ O, 0.5 M KCl, buffered	232
	Ni ²⁺		2.9x10 ⁻² (NiHL)			Spec	25	H ₂ O, 0.5 M KNO ₃ (HNO ₃ catalyzed)	234
	Ni ²⁺		2.2x10 ⁻⁴ (NiL)			Spec	40	H ₂ O, 0.5 M KNO ₃ (HNO ₃ catalyzed)	234
	Cu ²⁺	1.3x10 ⁻⁴				Pot	25	H ₂ O, 0.5 M KCl	232
	Cu ²⁺	2.9x10 ⁵ (CuHL)				Pot	25	H ₂ O, 0.5 M KCl	232
	Cu ²⁺	0.537				Spec	25	H ₂ O, 0.1058 M Et ₄ NOH [L] = 4.12x10 ⁻⁴ M	1104
	Cu ²⁺	1.18				Spec	25	H ₂ O, 0.1058 M Et ₄ NOH [L] = 8.26x10 ⁻⁴ M	1104
	Cu ²⁺	1.94				Spec	25	H ₂ O, 0.1058 M Et ₄ NOH [L] = 13.76x10 ⁻⁴ M	1104
	Cu ²⁺	2.78				Spec	25	H ₂ O, 0.1058 M Et ₄ NOH [L] = 20.63x10 ⁻⁴ M	1104
	Cu ²⁺	3.85				Spec	25	H ₂ O, 0.1058 M Et ₄ NOH [L] = 27.51x10 ⁻⁴ M	1104
	Cu ²⁺	0.184				Spec	25	H ₂ O, 0.2115 M Et ₄ NOH [L] = 2.75x10 ⁻⁴ M	1104
	Cu ²⁺	0.391				Spec	25	H ₂ O, 0.2115 M Et ₄ NOH [L] = 5.5x10 ⁻⁴ M	1104
	Cu ²⁺	0.886				Spec	25	H ₂ O, 0.2115 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺	1.35				Spec	25	H ₂ O, 0.2115 M Et ₄ NOH [L] = 16.5x10 ⁻⁴ M	1104
	Cu ²⁺	1.77				Spec	25	H ₂ O, 0.2115 M Et ₄ NOH [L] = 22x10 ⁻⁴ M	1104
	Cu ²⁺	0.183				Spec	25	H ₂ O, 0.3218 M Et ₄ NOH [L] = 4.12x10 ⁻⁴ M	1104
	Cu ²⁺	0.313				Spec	25	H ₂ O, 0.3218 M Et ₄ NOH [L] = 6.88x10 ⁻⁴ M	1104
	Cu ²⁺	0.538				Spec	25	H ₂ O, 0.3218 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺	0.915				Spec	25	H ₂ O, 0.3218 M Et ₄ NOH [L] = 17.88x10 ⁻⁴ M	1104
	Cu ²⁺	1.30				Spec	25	H ₂ O, 0.3218 M Et ₄ NOH [L] = 24.76x10 ⁻⁴ M	1104
	Cu ²⁺	0.140				Spec	25	H ₂ O, 0.4291 M Et ₄ NOH [L] = 4.12x10 ⁻⁴ M	1104
	Cu ²⁺	0.235				Spec	25	H ₂ O, 0.4291 M Et ₄ NOH [L] = 6.88x10 ⁻⁴ M	1104
	Cu ²⁺	0.391				Spec	25	H ₂ O, 0.4291 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺	0.596				Spec	25	H ₂ O, 0.4291 M Et ₄ NOH [L] = 16.5x10 ⁻⁴ M	1104
	Cu ²⁺	0.833				Spec	25	H ₂ O, 0.4291 M Et ₄ NOH [L] = 22x10 ⁻⁴ M	1104
	Cu ²⁺	0.301				Spec	25	H ₂ O, 0.5364 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺	0.234				Spec	25	H ₂ O, 0.6873 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺	0.197				Spec	25	H ₂ O, 0.8461 M Et ₄ NOH [L] = 11x10 ⁻⁴ M	1104
	Cu ²⁺		6.7x10 ⁻³ (CuHL)			Spec	25	H ₂ O, 0.5 M KNO ₃ (HNO ₃ catalyzed)	234
	Cu ²⁺		0.33(CuH ₂ L)			Spec	25	H ₂ O, 0.5 M KNO ₃ (HNO ₃ catalyzed)	234
	Zn ²⁺	4.5x10 ³ (ZnHL)				Pot	25	H ₂ O, 0.5 M KNO ₃	234
	Zn ²⁺		36(ZnHL)			Spec	25	H ₂ O, 0.5 M KNO ₃ , 0.01 M acetate buffer	234
A ₄ 14C4-7	Cu ²⁺		0.062			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.015 M HClO ₄)	239
	Cu ²⁺		0.12			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.03 M HClO ₄)	239
	Cu ²⁺		0.20			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.05 M HClO ₄)	239
	Cu ²⁺		0.63			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.15 M HClO ₄)	239
	Cu ²⁺		1.12			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.3 M HClO ₄)	239
	Cu ²⁺		1.72			Spec	25	H ₂ O, I = 1.0 (NaClO ₄ + 0.5 M HClO ₄)	239
A ₄ 14C4-9	Cu ²⁺		1.45x10 ⁻³			Spec	25	H ₂ O, I = 0.98 (NaClO ₄), [H ⁺] = 9.66x10 ⁻³ M	1105
	Cu ²⁺		1.80x10 ⁻³			Spec	25	H ₂ O, I = 0.98 (NaClO ₄), [H ⁺] = 19.33x10 ⁻³ M	1105
	Cu ²⁺		2.70x10 ⁻³			Spec	25	H ₂ O, I = 0.98 (NaClO ₄), [H ⁺] = 38.0x10 ⁻³ M	1105
	Cu ²⁺		2.40x10 ⁻³			Spec	25	H ₂ O, I = 0.98 (NaClO ₄), [H ⁺] = 48.33x10 ⁻³ M	1105
	Cu ²⁺		3.45x10 ⁻³			Spec	25	H ₂ O, I = 0.98 (NaClO ₄), [H ⁺] = 96.67x10 ⁻³ M	1105

Table V (Continued)

ligand	cation	k' , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger,a}$ kJ/mol	$\Delta S^{\ddagger,a}$ J/K mol	method ^b	T, °C	conditions ^c	ref
	Cu ²⁺		7.85x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 290.0x10 ⁻³ M	1105
	Cu ²⁺		10.12x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 386.66x10 ⁻³ M	1105
	Cu ²⁺		23.14x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 966.66x10 ⁻³ M	1105
	Cu ²⁺		1.40x10 ⁻³ + 2.24x10 ⁻² [H ⁺]			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = (9.66-966.66)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1105
	Cu ²⁺		4.60x10 ⁻³			Spec	30.5	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 48.33x10 ⁻³ M	1105
	Cu ²⁺		6.39x10 ⁻³			Spec	30.5	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 96.67x10 ⁻³ M	1105
	Cu ²⁺		10.00x10 ⁻³			Spec	30.5	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 193.33x10 ⁻³ M	1105
	Cu ²⁺		14.08x10 ⁻³			Spec	30.5	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 290.0x10 ⁻³ M	1105
	Cu ²⁺		2.64x10 ⁻³ + 3.93x10 ⁻² [H ⁺]			Spec	30.5	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = (48.33-290.0)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1105
	Cu ²⁺		4.82x10 ⁻³			Spec	34	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 19.33x10 ⁻³ M	1105
	Cu ²⁺		6.08x10 ⁻³			Spec	34	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 48.33x10 ⁻³ M	1105
	Cu ²⁺		9.00x10 ⁻³			Spec	34	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 96.67x10 ⁻³ M	1105
	Cu ²⁺		13.11x10 ⁻³			Spec	34	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 193.11x10 ⁻³ M	1105
	Cu ²⁺		4.02x10 ⁻³ + 5.31x10 ⁻² [H ⁺]			Spec	34	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = (19.33-193.11)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1105
	Cu ²⁺		7.38x10 ⁻³			Spec	38	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 9.66x10 ⁻³ M	1105
	Cu ²⁺		8.22x10 ⁻³			Spec	38	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 19.33x10 ⁻³ M	1105
	Cu ²⁺		11.13x10 ⁻³			Spec	38	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 48.33x10 ⁻³ M	1105
	Cu ²⁺		15.81x10 ⁻³			Spec	38	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 96.67x10 ⁻³ M	1105
	Cu ²⁺		6.10x10 ⁻³ + 10.28x10 ⁻² [H ⁺]			Spec	38	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = (9.66-96.67)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1105
	Cu ²⁺			85.3(d)	-13.6(d)	Spec	25-38	H ₂ O, $I = 0.98$ (NaClO ₄) (for k)	1105
	Cu ²⁺			85.2(d)	8.8(d)	Spec	25-38	H ₂ O, $I = 0.98$ (NaClO ₄) (for k_H)	1105
A ₄ 14C ₄ -30	Cu ²⁺	2.70x10 ⁴ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.02 M NaOH)	1106
	Cu ²⁺	2.00x10 ⁴ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.05 M NaOH)	1106
	Cu ²⁺	1.45x10 ⁴ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.1 M NaOH)	1106
	Cu ²⁺	8.65x10 ³ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.2 M NaOH)	1106
	Cu ²⁺	4.90x10 ³ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.4 M NaOH)	1106
	Cu ²⁺	4.12x10 ³ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.5 M NaOH)	1106
	Cu ²⁺	2.79x10 ³ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 0.8 M NaOH)	1106
	Cu ²⁺	2.39x10 ³ (CuLOH,blue)				Spec	25	H ₂ O, $I = 1.0$ (NaNO ₃ + 1.0 M NaOH)	1106
	Cu ²⁺	1.9x10 ⁻⁶	3.8x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.0 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		13.3x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.0 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	2.5x10 ⁻⁶	3.5x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.5 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		14.1x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.5 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	3.3x10 ⁻⁶	3.3x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		15.2x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	4.0x10 ⁻⁶	3.2x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.5 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺	4.15x10 ⁻⁷	2.30x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.0 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{*}, kJ/mol$	$\Delta S^{*}, J/K mol$	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺		16.1x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 2.5 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	4.6x10 ⁻⁶	3.1x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		16.6x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	5.6x10 ⁻⁶	3.1x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		17.8x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	6.0x10 ⁻⁶	3.0x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.0 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		18.3x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.0 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	6.9x10 ⁻⁶	3.0x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		19.2x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	7.6x10 ⁻⁶	2.9x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 5.0 M HNO ₃), [step 1: CuL (blue) ²⁺ = CuHL ³⁺]	1107
	Cu ²⁺		20.2x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 5.0 M HNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	5.2x10 ⁻⁷⁺ 1.42x10 ⁻⁶ [H ⁺]	2.8x10 ⁻⁶⁺ 1.1x10 ⁻⁶ [H ⁺]			Spec	25	H ₂ O, I = 5.0 (HNO ₃ + NaNO ₃) [step 1: CuL(blue) ²⁺ = CuHL ³⁺], [H ⁺] = 1.5	1107
	Cu ²⁺		11.5x10 ⁻⁶⁺ 1.7x10 ⁻⁶ [H ⁺]			Spec	25	H ₂ O, I = 5.0 (HNO ₃ + NaNO ₃), [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1107
	Cu ²⁺	1.70x10 ⁻⁷	6.32x10 ⁻⁶			Spec	25	[H ⁺] = 1.5 M H ₂ O, I = 5.0 (NaNO ₃ + 0.2 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.64x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.2 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	2.31x10 ⁻⁷	3.77x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.4 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.7x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.4 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	2.62x10 ⁻⁷	3.38x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.5 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.73x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.5 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	2.92x10 ⁻⁷	2.95x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.6 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.76x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.6 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	3.53x10 ⁻⁷	2.64x20 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.8 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.78x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.8 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺		2.80x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.0 M HNO ₃) [step 2: CuHL ³⁺ -> Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	5.68x10 ⁻⁷	2.00x10 ⁻⁶			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.5 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	ΔH^{*a} kJ/mol	ΔS^{*a} J/K·mol	method ^b	T , °C	conditions ^c	ref
	Cu ²⁺		3.03x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.5 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	7.21x10 ⁻⁷	1.81x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.22x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	8.74x10 ⁻⁷	1.74x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.5 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.34x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.5 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	10.27x10 ⁻⁷	1.65x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 3.0 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.54x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 3.0 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	11.80x10 ⁻⁷	1.60x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 3.5 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.64x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 3.5 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	13.33x10 ⁻⁷	1.59x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 4.0 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.75x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 4.0 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	14.68x10 ⁻⁷	1.54x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 4.5 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		3.94x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 4.5 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	16.39x10 ⁻⁷	1.50x10 ⁻⁵			Spec	25	H ₂ O, $I = 5.0$ (HNO ₃ + 5.0 M HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		4.19x10 ⁻⁶			Spec	25	H ₂ O, $I = 5.0$ (HNO ₃ + 5.0 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
	Cu ²⁺	1.08x10 ⁻⁷ + 3.06x10 ⁻⁷ [H ⁺]	1.32x10 ⁻⁵ + 9.98x10 ⁻⁶ /[H ⁺]			Spec	25	H ₂ O, $I = 5.0$ [NaNO ₃ + (0.2-5.0) M HNO ₃] [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1108
	Cu ²⁺		2.56x10 ⁻⁶ + 3.14x10 ⁻⁷ [H ⁺]			Spec	25	H ₂ O, $I = 5.0$ [NaNO ₃ + (0.2-5.0) M HNO ₃] [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1108
A ₄ 14C4-31	Cu ²⁺	2.6x10 ⁻⁴	1.5x10 ⁻³			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.0 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺		4.4x10 ⁻⁴			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1109
	Cu ²⁺	3.9x10 ⁻⁴	1.5x10 ⁻³			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.5 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺		4.4x10 ⁻⁴			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 1.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1109
	Cu ²⁺	5.6x10 ⁻⁴	1.4x10 ⁻⁸			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺		4.4x10 ⁻⁴			Spec	25	H ₂ O, $I = 5.0$ (NaNO ₃ + 2.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1109

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	6.3x10 ⁻⁴	1.4x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 2.5 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.5x10 ⁻⁴	4.5x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 2.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1109
	Cu ²⁺	7.6x10 ⁻⁴	1.4x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.5x10 ⁻⁴	4.5x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1109
	Cu ²⁺	9.0x10 ⁻⁴	1.4x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.6x10 ⁻⁴	4.6x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1109
	Cu ²⁺	10.8x10 ⁻⁴	1.3x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.0 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.7x10 ⁻⁴	4.7x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1109
	Cu ²⁺	11.8x10 ⁻⁴	1.3x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.7x10 ⁻⁴	4.7x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1109
	Cu ²⁺	13.4x10 ⁻⁴	1.3x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (HNO ₃) [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.8x10 ⁻⁴	4.8x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1109
	Cu ²⁺	2.6x10 ⁻⁴ x[H ⁺]	1.4x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (HNO ₃ + NaNO ₃), [step 1: CuL(blue) ²⁺ = CuHL ³⁺]	1109
	Cu ²⁺	4.6x10 ⁻⁴	4.6x10 ⁻⁴			Spec	25	[H ⁺] = 1.0-5.0 M H ₂ O, I = 5.0 (HNO ₃ + NaNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1109
	Cu ²⁺	0.17x10 ⁻⁸	2.50x10 ⁻³			Spec	25	[H ⁺] = 1.0-5.0 M H ₂ O, I = 5.0 (NaNO ₃ + 0.1 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.32x10 ⁻⁴	4.32x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.1 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	0.51x10 ⁻⁸	2.51x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.2 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.42x10 ⁻⁴	4.42x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.2 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	0.93x10 ⁻⁸	2.53x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.5 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.46x10 ⁻⁴	4.46x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	1.74x10 ⁻⁸	2.52x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.8 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.46x10 ⁻⁴	4.46x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 0.8 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	2.17x10 ⁻⁸	2.60x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.0 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.59x10 ⁻⁴	4.59x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	3.42x10 ⁻⁸	2.56x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.5 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.64x10 ⁻⁴	4.64x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 1.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	4.56x10 ⁻⁶	2.50x10 ⁻³			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 2.0 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺	4.66x10 ⁻⁴	4.66x10 ⁻⁴			Spec	25	H ₂ O, I = 5.0 (NaNO ₃ + 2.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K.mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	5.61x10 ⁻⁸	2.50x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 2.5 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺		4.68x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 2.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	6.42x10 ⁻⁸	2.55x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺		4.73x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 3.0 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	7.88x10 ⁻⁸	2.49x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺		4.81x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 3.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	9.63x10 ⁻⁸	2.52x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 4.0 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺		4.88x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 4.0 M HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1110
	Cu ²⁺	10.30x10 ⁻⁸	2.48x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 1: CuL(red) ²⁺ → CuHL ³⁺]	1110
	Cu ²⁺		4.93x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (NaNO ₃ + 4.5 M HNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	11.70x10 ⁻⁸	2.45x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (HNO ₃) [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1110
	Cu ²⁺		5.0x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (HNO ₃) [step 2: CuHL ³⁺ → Cu ²⁺ + H ₄ L ⁴⁺]	1110
	Cu ²⁺	2.27x10 ⁻⁸ x[H ⁺]	2.52x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 5.0 (HNO ₃ + NaNO ₃), [step 1: CuL(red) ²⁺ = CuHL ³⁺]	1110
	Cu ²⁺		1.03x10 ⁻⁶ [H ⁺] +4.46x10 ⁻⁴			Spec	25	H ₂ O, <i>I</i> = 5.0 (HNO ₃ + NaNO ₃), [step 2: CuHL ³⁺ → Cu ²⁺ +H ₄ L ⁴⁺]	1110
	Cu ²⁺	8.6x10 ⁻⁷				Pot	25	[H ⁺] = 0.1-5.0 M H ₂ O, 0.5 M KNO ₃ , pH 4-5.5 [step 1: Cu ²⁺ + H ₂ L ²⁺ → CuL ²⁺ -blue]	1111
	Cu ²⁺	9.2x10 ⁻⁷				Pot	25	H ₂ O, 0.5 M KNO ₃ , pH 4-5.5 [step 2: CuL ²⁺ -blue → CuL ²⁺ -violet]	1111
	Cu ²⁺	2.7x10 ⁻⁶				Pot	40	H ₂ O, 0.1 M KNO ₃ , pH 4-5.5 (Cu ²⁺ + H ₂ L ²⁺ → CuL ²⁺ -blue)	1111
	Cu ²⁺	5.2x10 ⁻⁶				Pot	40	H ₂ O, 0.5 M KNO ₃ , pH 4-5.5 (Cu ²⁺ + H ₂ L ²⁺ → CuL ²⁺ -blue)	1111
	Cu ²⁺	3.0x10 ⁻⁶				Spec	40	H ₂ O, 0.1 M KNO ₃ , acetate buffer (Cu ²⁺ + H ₂ L ²⁺ → CuL ²⁺ -blue)	1111
	Cu ²⁺	1.2x10 ⁻⁶				Pot	50	H ₂ O, 0.5 M KNO ₃ , pH 4-5.5 (CuL ²⁺ -blue → CuL ²⁺ -violet)	1111
CHART VI									
K ₂ A ₄ 14C ₄ ·1	Ni ²⁺		4.34x10 ⁻³			Pot	20	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.74	1112
	Ni ²⁺		2.48x10 ⁻³			Pot	20	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.86	1112
	Ni ²⁺		1.72x10 ⁻³			Pot	20	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.94	1112
	Ni ²⁺		0.75x10 ⁻³			Pot	20	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 4.12	1112
	Ni ²⁺		0.53x10 ⁻³			Pot	20	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 4.20	1112
	Ni ²⁺		8.52x10 ⁻³			Pot	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.69	1112
	Ni ²⁺		5.40x10 ⁻³			Pot	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.80	1112
	Ni ²⁺		3.33x10 ⁻³			Pot	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.90	1112
	Ni ²⁺		2.43x10 ⁻³			Pot	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 3.96	1112
	Ni ²⁺		1.67x10 ⁻³			Pot	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄), pH 4.04	1112

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	ΔH^{*f} , kJ/mol	ΔS^{*f} , J/K·mol	method ^b	T, °C	conditions ^c	ref
	Ni ²⁺		1.36x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.09	1112
	Ni ²⁺		1.18x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.12	1112
	Ni ²⁺		0.65x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.25	1112
	Ni ²⁺		0.33x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.40	1112
	Ni ²⁺		4.51x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 3.93	1112
	Ni ²⁺		3.33x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.00	1112
	Ni ²⁺		2.47x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.07	1112
	Ni ²⁺		2.08x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.10	1112
	Ni ²⁺		1.49x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.18	1112
	Ni ²⁺		3.97x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 4.05	1112
	Ni ²⁺		3.24x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 4.10	1112
	Ni ²⁺		2.48x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 4.15	1112
	Ni ²⁺		1.99x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 4.20	1112
	Ni ²⁺			64.5(d)	69(d)	Pot	25	H ₂ O, I = 0.1 (NaClO ₄), (for k_H)	1112
	Cu ²⁺		3.31x10 ⁻³			Pot	20	H ₂ O, I = 0.1 (NaClO ₄), pH 4.77	1112
	Cu ²⁺		2.19x10 ⁻³			Pot	20	H ₂ O, I = 0.1 (NaClO ₄), pH 4.87	1112
	Cu ²⁺		1.58x10 ⁻³			Pot	20	H ₂ O, I = 0.1 (NaClO ₄), pH 4.92	1112
	Cu ²⁺		1.14x10 ⁻³			Pot	20	H ₂ O, I = 0.1 (NaClO ₄), pH 5.00	1112
	Cu ²⁺		0.98x10 ⁻³			Pot	20	H ₂ O, I = 0.1 (NaClO ₄), pH 5.05	1112
	Cu ²⁺		6.68x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.73	1112
	Cu ²⁺		4.49x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.81	1112
	Cu ²⁺		3.68x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.87	1112
	Cu ²⁺		2.59x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 4.94	1112
	Cu ²⁺		1.95x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 5.00	1112
	Cu ²⁺		1.43x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 5.05	1112
	Cu ²⁺		0.60x10 ⁻³			Pot	25	H ₂ O, I = 0.1 (NaClO ₄), pH 5.25	1112
	Cu ²⁺		4.16x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.95	1112
	Cu ²⁺		3.41x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 4.97	1112
	Cu ²⁺		2.79x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 5.03	1112
	Cu ²⁺		2.27x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 5.08	1112
	Cu ²⁺		1.29x10 ⁻³			Pot	30	H ₂ O, I = 0.1 (NaClO ₄), pH 5.18	1112
	Cu ²⁺		6.31x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 4.96	1112
	Cu ²⁺		4.62x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 5.02	1112
	Cu ²⁺		3.02x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 5.13	1112
	Cu ²⁺		2.47x10 ⁻³			Pot	35	H ₂ O, I = 0.1 (NaClO ₄), pH 5.17	1112
	Cu ²⁺			71.7(d)	131(d)	Pot	25	H ₂ O, I = 0.1 (NaClO ₄), (acid catalyzed)	1112
	Cu ²⁺	3.1x10 ³ (CuHL)				Spec	25	H ₂ O, 0.2 M NaClO ₄ , 4.8 < pH < 5.7 (acetate buffer)	203
A ₃ T14C4-1	Cu ²⁺	1.479x10 ²				Spec	25	[Cu(O ₂ CCH ₃) ⁺ + HL ⁺] H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260
	Cu ²⁺	2.10x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260
	Cu ²⁺	3.037x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260
	Cu ²⁺	4.00x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.3	260
	Cu ²⁺	7.18x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.5	260

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	ΔH^{*o} kJ/mol	ΔS^{*o} J/K·mol	method ^b	T, °C	conditions ^c	ref
A ₂ T ₂ 14C4-1	Cu ²⁺	73.2				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260
	Cu ²⁺	1.284x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260
	Cu ²⁺	2.24x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260
	Cu ²⁺	3.72x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.3	260
	Cu ²⁺	7.87x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.5	260
A ₂ T ₂ 14C4-2	Cu ²⁺	5.58				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 3.3	260
	Cu ²⁺	9.88				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 3.5	280
	Cu ²⁺	15.7				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 3.7	260
	Cu ²⁺	26.4, 16.9				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 3.9	260
	Cu ²⁺	83.9, 54.5				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.1	260
	Cu ²⁺	1.089x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.3	260
	Cu ²⁺	2.54x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.5	260
	Cu ²⁺	4.69x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260
	Cu ²⁺	7.49x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260
	Cu ²⁺	1.55x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260
	Cu ²⁺	2.89x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.3	260
	Cu ²⁺	5.79x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.5	260
	Cu ²⁺	9.91x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.7	260
	A ₂ T ₂ 14C4-3	Cu ²⁺	64.4				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.5
Cu ²⁺		1.081x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260
Cu ²⁺		1.605x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260
Cu ²⁺		2.90x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260
Cu ²⁺		4.68x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.3	260
Cu ²⁺		8.95x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.5	260
AT ₃ 14C4-1	Cu ²⁺	4.345x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.72	260
	Cu ²⁺	6.44x10 ²				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.92	260
	Cu ²⁺	1.43x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.39	260
	Cu ²⁺	2.41x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.57	260
T ₄ 14C4-4	Cu ²⁺	5.4x10 ³		42	-23	Spec	5	H ₂ O, 0.1 M NO ₃ ⁻	262
	Cu ²⁺	9.6x10 ³				Spec	15	H ₂ O, 0.1 M NO ₃ ⁻	262
	Cu ²⁺	13.8x10 ³	2.6			Spec	25	H ₂ O, 0.1 M ClO ₄ ⁻ , pH 1.5	262
	Cu ²⁺	13.2x10 ³	2			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 1.5	262
	Cu ²⁺	13.3x10 ³	3.6			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 4.5	262
	Cu ²⁺	16.7x10 ³	2.1			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 5.5	262
	Cu ²⁺	3.6x10 ⁴				Spec	35	H ₂ O, 0.1 M NO ₃ ⁻	262
T ₄ 14C4-5	Cu ²⁺	1.3x10 ⁸	1.75			Spec	25	H ₂ O, 0.1 M ClO ₄ ⁻ , pH 1.5	262
	Cu ²⁺	6.0x10 ³	0.58			Spec	25	H ₂ O, 0.1 M ClO ₄ ⁻ , pH 1.5	262
T ₄ 14C4-6	Cu ²⁺	1.71x10 ³		52	-15	Spec	15	H ₂ O, 0.1 M NO ₃ ⁻	262
	Cu ²⁺	3.9x10 ³	1.4			Spec	25	H ₂ O, 0.1 M ClO ₄ ⁻ , pH 1.5	262
	Cu ²⁺	4.1x10 ³	0.9			Spec	25	H ₂ O, 0.1 M ClO ₄ ⁻ , pH 4.7	262
	Cu ²⁺	3.6x10 ³	1.9			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 1.4	262
	Cu ²⁺	3.2x10 ³	1.5			Spec	25	H ₂ O, <0.001 M NO ₃ ⁻ or ClO ₄ ⁻ , pH 3.1-3.9	262
	Cu ²⁺	3.18x10 ³	1.9			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 4.8	262
	Cu ²⁺	3.6x10 ³	1.5			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 5.1	262
	Cu ²⁺	3.0x10 ³	2.8			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 5.3	262

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	3.1x10 ⁸	2.1			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 5.5	262
	Cu ²⁺	4.7x10 ⁸	1.0			Spec	25	H ₂ O, 0.1 M NO ₃ ⁻ , pH 5.8	262
	Cu ²⁺	3.7x10 ⁸				Spec	30.1	H ₂ O, 0.1 M NO ₃ ⁻	262
	Cu ²⁺	5.77x10 ⁸				Spec	35	H ₂ O, 0.1 M NO ₃ ⁻	262
CHART VII									
B ₂ A ₂ 15C4-1	Ni ²⁺		1.6x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, Cu ²⁺ as scavenger	1113
	Ni ²⁺		3.2x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 2.90x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		3.7x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 3.84x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		4.1x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 4.50x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		4.7x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 5.28x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		4.8x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 6.07x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		5.3x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 7.23x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		7.1x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 12.14x10 ⁻² M 1,10-Phenanthroline	1113
	Ni ²⁺		2.0x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 4.04x10 ⁻² M 2,2'-Bipyridine	1113
	Ni ²⁺		2.6x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 6.07x10 ⁻² M 2,2'-Bipyridine	1113
	Ni ²⁺		3.3x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 8.09x10 ⁻² M 2,2'-Bipyridine	1113
	Ni ²⁺		4.0x10 ⁻²			Spec	25?	95% MeOH, 0.1 M Me ₄ NCl, 12.14x10 ⁻² M 2,2'-Bipyridine	1113
A ₄ 15C4-3	Cu ²⁺	1.1x10 ⁸ (CuHL)				Polg	10	H ₂ O, 0.2 M NaClO ₄ , pH < 4.0 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + HL ⁺]	285
	Cu ²⁺	2.2x10 ⁸ (CuHL)				Polg	17	H ₂ O, 0.2 M NaClO ₄ , pH < 4.0 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + HL ⁺]	285
	Cu ²⁺	4.0x10 ⁸ (CuHL)	3.8x10 ⁻⁹	57.3	112	Polg	25	H ₂ O, 0.2 M NaClO ₄ , pH < 4.0 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + HL ⁺]	285
BA ₂ T ₂ 15C4-1	Ni ²⁺		2.78x10 ⁻⁵			Spec	25	H ₂ O, 0.5 M KNO ₃	289
	Cu ²⁺	29				Spec	25	H ₂ O, 0.5 M KNO ₃ , 0.02-0.1 M acetate buffer (Cu ²⁺ + HL ⁺ = CuL ²⁺ + H ⁺)	289
	Cu ²⁺	111				Spec	25	H ₂ O, 0.5 M KNO ₃ , 0.02-0.1 M acetate buffer (CuCH ₃ CO ⁺ + HL ⁺ = CuL ²⁺ + H ⁺ + CH ₃ CO ⁻)	289
B ₂ A ₂ T ₂ 15C4-1	Cu ²⁺		4.7x10 ⁻⁶			Spec	25	H ₂ O, 0.5 M KNO ₃ , [HNO ₃] = high	289
	Ni ²⁺		5.5x10 ⁻⁴			Spec	25	90% D ₂ O, 1.0 M HCl [step 1: NiL ²⁺ ·-> intermediate]	1114
	Ni ²⁺		7.9x10 ⁻⁵			Spec	25	90% D ₂ O, 1.0 M HCl [step 2: intermediate ·-> products]	1114
	Ni ²⁺		7.2x10 ⁻⁴	92(d)	-36(d)	Spec	25	H ₂ O, 1.0 M HCl [step 1: NiL ²⁺ ·->intermediate]	1114
	Ni ²⁺		9.4x10 ⁻⁵	98(d)	-42(d)	Spec	25	H ₂ O, 1.0 M HCl [step 2: intermediate ·-> products]	1114
	Ni ²⁺		7.2x10 ⁻⁴			Spec	25	H ₂ O, 0.05 M HCl, 1.0 M KCl, [step 1: NiL ²⁺ ·-> intermediate]	1114
	Ni ²⁺		9.2x10 ⁻⁵			Spec	25	H ₂ O, 0.05 M HCl, 1.0 M KCl, [step 2: intermediate ·-> products]	1114
	Ni ²⁺		7.7x10 ⁻⁴			Spec	25	H ₂ O, 0.009 M HCl, 1.0 M KCl, [step 1: NiL ²⁺ ·-> intermediate]	1114
	Ni ²⁺		9.7x10 ⁻⁵			Spec	25	H ₂ O, 0.009 M HCl, 1.0 M KCl, [step 2: intermediate ·-> products]	1114

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K·mol	method ^b	T, °C	conditions ^c	ref
CHART VIII									
15C5-1	Li ⁺	1.8x10 ¹⁰	4.9x10 ⁶			US	25	1,3-Dioxolane (anion = ClO ₄), [step 1: Li ⁺ + L = Li ⁺ ...L]	98
	Li ⁺	1.5x10 ⁹	7.8x10 ⁶			US	25	1,3-Dioxolane (anion = AsF ₆), [step 1: Li ⁺ + L = Li ⁺ ...L]	98
	Li ⁺	2.7x10 ⁷	3.4x10 ⁶			US	25	1,3-Dioxolane (anion = AsF ₆), [step 2&3: Li ⁺ ...L = (LiL) ⁺]	98
	Na ⁺		1.45x10 ⁵	21(d)	-76(d)	NMR	28.5	NMe (anion = BPh ₄), (mechanism 2)	1115
CHART XI									
B15C5-1	Na ⁺		3.5x10 ⁸			NMR	-15	MeCN (anion = BPh ₄) (mechanism 1)	1115
	Na ⁺		0.9x10 ⁶			NMR	-15	MeCN (anion = BPh ₄) (mechanism 2)	1115
	Na ⁺		1.1x10 ⁵	28(d)	-57(d)	NMR	27	NMe (anion = BPh ₄) (mechanism 2)	1116
	Na ⁺		1.1x10 ²			NMR	28.5	NMe (anion = BPh ₄) (mechanism 1)	1115
	Na ⁺		1.09x10 ⁵	28(d)	-57(d)	NMR	28.5	NMe (anion = BPh ₄) (mechanism 2)	1116
CHART XII									
A15C5-2	Na ⁺	9.1x10 ⁹	5.9x10 ⁷			US	25	MeOH [step 1&2: Na ⁺ + L = Na ⁺ L]	392
	Na ⁺	5.9x10 ⁸	3.9x10 ⁵			US	25	MeOH [step 3: Na ⁺ L = (NaL) ⁺]	392
	NH ₄ ⁺	2.3x10 ⁹	1.2x10 ⁷			US	25	MeOH [step 1&2: Na ⁺ + L = Na ⁺ L]	392
	NH ₄ ⁺	8.4x10 ⁸	1.1x10 ⁶			US	25	MeOH [step 3: Na ⁺ L = (NaL) ⁺]	392
A15C5-31	Na ⁺	9.0x10 ¹⁰	2.1x10 ⁸			US	25	MeOH [step 1&2: Na ⁺ + L = Na ⁺ L]	392
	Na ⁺	1.2x10 ⁷	1.5x10 ⁵			US	25	MeOH [step 3: Na ⁺ L = (NaL) ⁺]	392
A ₂ 15C5-1	Na ⁺	fast	fast			NMR	25	DMF	407
	Na ⁺	fast	fast			NMR	25	DEF	407
	Na ⁺	fast	fast			NMR	25	DMAC	407
	Ca ²⁺	1.3x10 ⁵	93.3	37.4(d)	-81.9(d)	Cond	25	MeOH	413
	Sr ²⁺		81.3			Cond	-8.5	MeOH	413
A ₂ 15C5-8	La ³⁺		3.65x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	La ³⁺		4.15x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	La ³⁺		5.55x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 4.55x10 ⁻⁵ M	1117
	La ³⁺		6.36x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	La ³⁺		7.81x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	La ³⁺		10.4x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	La ³⁺		12.6x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 19.36x10 ⁻⁵ M	1117
	La ³⁺		15.2x10 ⁻²			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	La ³⁺		3.22x10 ⁻² + 4.85x10 ⁻² [H ⁺]			Spec	15	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84+24.66)x10 ⁻⁵ M	1117
	La ³⁺		4.93x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	La ³⁺		5.98x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	La ³⁺		7.39x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	La ³⁺		10.0x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	La ³⁺		11.9x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	La ³⁺		15.7x10 ⁻²			Spec	25	H ₂ O, I = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, o}$ kJ/mol	$\Delta S^{\ddagger, o}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	La ³⁺		19.1x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁶ M	1117
	La ³⁺		22.2x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁶ M	1117
	La ³⁺		4.69x10 ⁻²⁺ 7.18x10 ² [H ⁺]			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84·24.66)x10 ⁻⁶ M	1117
	La ³⁺		6.62x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁶ M	1117
	La ³⁺		8.08x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁶ M	1117
	La ³⁺		10.4x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁶ M	1117
	La ³⁺		13.7x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁶ M	1117
	La ³⁺		16.8x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁶ M	1117
	La ³⁺		22.1x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁶ M	1117
	La ³⁺		26.9x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁶ M	1117
	La ³⁺		31.6x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁶ M	1117
	La ³⁺		6.29x10 ⁻²⁺ 1.03x10 ³ [H ⁺]			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84·24.66)x10 ⁻⁶ M	1117
	La ³⁺		8.81x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁶ M	1117
	La ³⁺		10.9x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁶ M	1117
	La ³⁺		13.8x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁶ M	1117
	La ³⁺		19.0x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁶ M	1117
	La ³⁺		23.1x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁶ M	1117
	La ³⁺		31.0x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁶ M	1117
	La ³⁺		38.3x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁶ M	1117
	La ³⁺		48.0x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁶ M	1117
	La ³⁺		7.66x10 ⁻²⁺ 1.58x10 ³ [H ⁺]			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84·24.66)x10 ⁻⁶ M	1117
	La ³⁺			19.7(d)	-207(d)	Spec	15-45	H ₂ O, <i>I</i> = 0.1(NaClO ₄) (for <i>k</i>)	1117
	La ³⁺			27.2(d)	-99.2(d)	Spec	15-45	H ₂ O, <i>I</i> = 0.1(NaClO ₄) (for <i>k_H</i>)	1117
	La ³⁺		6.75x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 1.25x10 ⁻² M acetate	1117
	La ³⁺		8.57x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 2.0x10 ⁻² M acetate	1117
	La ³⁺		12.2x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 3.75x10 ⁻² M acetate	1117
	La ³⁺		15.0x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 5.0x10 ⁻² M acetate	1117
	La ³⁺		5.67x10 ⁻²			Spec	25	H ₂ O, 0.005 M acetate, [H ⁺] = 1.47x10 ⁻⁶ M, 0.05 M LiClO ₄	1117
	La ³⁺		5.11x10 ⁻²			Spec	25	H ₂ O, 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁶ M, 0.2 M LiClO ₄	1117

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K mol	method ^b	T , °C	conditions ^c	rsf
	La ³⁺		4.50x10 ⁻²			Spec	25	H ₂ O, 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.4 M LiClO ₄	1117
	La ³⁺		3.84x10 ⁻²			Spec	25	H ₂ O, 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.6 M LiClO ₄	1117
	Pr ³⁺		4.36x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Pr ³⁺		5.62x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Pr ³⁺		7.37x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Pr ³⁺		10.2x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Pr ³⁺		12.4x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Pr ³⁺		16.5x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Pr ³⁺		20.3x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Pr ³⁺		24.4x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Pr ³⁺		4.14x10 ⁻³ + 81.9[H ⁺]			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Eu ³⁺		1.21x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Eu ³⁺		1.41x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Eu ³⁺		1.83x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 4.55x10 ⁻⁵ M	1117
	Eu ³⁺		2.27x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Eu ³⁺		2.78x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Eu ³⁺		3.61x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Eu ³⁺		4.47x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 19.36x10 ⁻⁵ M	1117
	Eu ³⁺		5.39x10 ⁻³			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Eu ³⁺		1.06x10 ⁻³ + 17.5[H ⁺])			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Eu ³⁺		1.89x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Eu ³⁺		2.30x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Eu ³⁺		2.92x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Eu ³⁺		4.06x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Eu ³⁺		4.88x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Eu ³⁺		6.49x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Eu ³⁺		8.05x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Eu ³⁺		9.33x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Eu ³⁺		1.76x10 ⁻³ + 31.1[H ⁺]			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	k_f , $M^{-1} s^{-1}$	k_d , s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K mol	method ^b	T , °C	conditions ^c	ref
	Eu ³⁺		2.84x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Eu ³⁺		3.55x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Eu ³⁺		4.51x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Eu ³⁺		6.07x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Eu ³⁺		7.00x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Eu ³⁺		9.10x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Eu ³⁺		11.2x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Eu ³⁺		13.0x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Eu ³⁺		2.83x10 ⁻³ + 41.7[H ⁺]			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, (0.84-24.66)x10 ⁻⁵ M	1117
	Eu ³⁺		4.04x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Eu ³⁺		4.78x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Eu ³⁺		6.04x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Eu ³⁺		8.54x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Eu ³⁺		10.4x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Eu ³⁺		13.9x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Eu ³⁺		17.8x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Eu ³⁺		20.3x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Eu ³⁺		3.54x10 ⁻³ + 69.2[H ⁺]			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Eu ³⁺			28.9(d)	-203(d)	Spec	15-45	H ₂ O, $I = 0.1$ (NaClO ₄) (for k)	1117
	Eu ³⁺			31.0(d)	-113(d)	Spec	15-45	H ₂ O, $I = 0.1$ (NaClO ₄) (for k_H)	1117
	Eu ³⁺		2.80x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 1.25x10 ⁻² M acetate	1117
	Eu ³⁺		3.48x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 2.0x10 ⁻² M acetate	1117
	Eu ³⁺		4.93x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 3.75x10 ⁻² M acetate	1117
	Eu ³⁺		5.83x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 5.0x10 ⁻² M acetate	1117
	Eu ³⁺		2.17x10 ⁻³			Spec	25	H ₂ O, 005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.05 M Li ClO ₄	1117
	Eu ³⁺		2.03x10 ⁻³			Spec	25	H ₂ O, 005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.2 M Li ClO ₄	1117
	Eu ³⁺		1.82x10 ⁻³			Spec	25	H ₂ O, 005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.4 M Li ClO ₄	1117
	Eu ³⁺		1.62x10 ⁻³			Spec	25	H ₂ O, 005 M acetate [H ⁺] = 1.47x10 ⁻⁵ M, 0.6 M Li ClO ₄	1117
	Tb ³⁺		2.56x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger}, kJ/mol$	$\Delta S^{\ddagger}, J/K \cdot mol$	method ^b	$T, ^\circ C$	conditions ^c	ref
	Tb ³⁺		2.90x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Tb ³⁺		3.61x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Tb ³⁺		4.72x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Tb ³⁺		5.60x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Tb ³⁺		6.55x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Tb ³⁺		7.59x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Tb ³⁺		8.43x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Tb ³⁺	2.18x10 ⁻³ + 43.2[H ⁺]/ (1+2.96x10 ⁸ [H ⁺])				Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Er ³⁺		2.00x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Er ³⁺		2.21x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Er ³⁺		2.74x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 4.55x10 ⁻⁵ M	1117
	Er ³⁺		3.09x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Er ³⁺		3.35x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Er ³⁺		3.74x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Er ³⁺		4.03x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 19.36x10 ⁻⁵ M	1117
	Er ³⁺		4.35x10 ⁻³			Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Er ³⁺	1.79x10 ⁻³ + 26.35[H ⁺]/ (1+6.41x10 ⁸ [H ⁺])				Spec	15	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Er ³⁺		3.82x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Er ³⁺		4.49x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Er ³⁺		5.40x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Er ³⁺		6.69x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Er ³⁺		7.38x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Er ³⁺		8.45x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Er ³⁺		9.12x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Er ³⁺		9.89x10 ⁻³			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Er ³⁺	3.32x10 ⁻³ + 69.06[H ⁺]/ (1+6.64x 10 ⁸ [H ⁺])				Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Er ³⁺		6.27x10 ⁻³			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Er ³⁺		7.54x10 ⁻³			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	k_f^i , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	T , °C	conditions ^c	ref
	Er ³⁺		9.55x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Er ³⁺		11.7x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Er ³⁺		13.3x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Er ³⁺		15.3x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Er ³⁺		17.0x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Er ³⁺		18.4x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Er ³⁺		5.42x10 ⁻³ + 127.5[H ⁺]/ (1+5.69x10 ⁸ [H ⁺])			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84·24.66)x10 ⁻⁵ M	1117
	Er ³⁺		9.07x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Er ³⁺		11.1x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Er ³⁺		15.1x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 4.55x10 ⁻⁵ M	1117
	Er ³⁺		18.4x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Er ³⁺		21.8x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Er ³⁺		26.8x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Er ³⁺		29.4x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 19.36x10 ⁻⁵ M	1117
	Er ³⁺		31.8x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Er ³⁺		7.21x10 ⁻³ + 221.1[H ⁺]/ (1+4.82x 10 ⁸ [H ⁺])			Spec	45	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84·24.66)x10 ⁻⁵ M	1117
	Er ³⁺			33.1(d)	-182(d)	Spec	15-45	H ₂ O, $I = 0.1$ (NaClO ₄) (for k)	1117
	Er ³⁺			58.6(d)	-87.0(d)	Spec	15-45	H ₂ O, $I = 0.1$ (NaClO ₄) (for k_H)	1117
	Er ³⁺		4.48x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 1.25x10 ⁻² M acetate	1117
	Er ³⁺		4.47x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 2.0x10 ⁻² M acetate	1117
	Er ³⁺		4.49x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 3.75x10 ⁻² M acetate	1117
	Er ³⁺		4.47x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 5.0x10 ⁻² M acetate	1117
	Yb ³⁺		0.98x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Yb ³⁺		1.10x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Yb ³⁺		1.27x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Yb ³⁺		1.48x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Yb ³⁺		1.59x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Yb ³⁺		1.74x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Yb ³⁺		1.84x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	$k^f, \text{M}^{-1} \text{s}^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/Kmol	method ^b	$T, ^\circ\text{C}$	conditions ^c	ref
	Yb ³⁺		1.94x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Yb ³⁺		8.76x10 ⁻³ + 140.9[H ⁺]/ (1+9.39x10 ⁸ [H ⁺])			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Yb ³⁺		1.09x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 1.25x10 ⁻² M acetate	1117
	Yb ³⁺		1.11x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 2.0x10 ⁻² M acetate	1117
	Yb ³⁺		1.12x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 3.75x10 ⁻² M acetate	1117
	Yb ³⁺		1.12x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁵ M, 5.0x10 ⁻² M acetate	1117
	Lu ³⁺		0.92x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Lu ³⁺		1.07x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Lu ³⁺		1.36x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 4.55x10 ⁻⁵ M	1117
	Lu ³⁺		1.53x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Lu ³⁺		1.65x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Lu ³⁺		1.78x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Lu ³⁺		1.83x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 19.36x10 ⁻⁵ M	1117
	Lu ³⁺		1.91x10 ⁻²			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Lu ³⁺		7.29x10 ⁻³ + 252.3[H ⁺]/ (1+1.74x 10 ⁴ [H ⁺])			Spec	15	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Lu ³⁺		1.46x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Lu ³⁺		1.84x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Lu ³⁺		2.35x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117
	Lu ³⁺		2.95x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁵ M	1117
	Lu ³⁺		3.31x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁵ M	1117
	Lu ³⁺		3.78x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁵ M	1117
	Lu ³⁺		4.02x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁵ M	1117
	Lu ³⁺		4.11x10 ⁻²			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁵ M	1117
	Lu ³⁺		1.08x10 ⁻² + 501.4[H ⁺]/ (1+1.22x 10 ⁴ [H ⁺])			Spec	25	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁵ M	1117
	Lu ³⁺		2.40x10 ⁻²			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁵ M	1117
	Lu ³⁺		2.90x10 ⁻²			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁵ M	1117
	Lu ³⁺		3.75x10 ⁻²			Spec	35	H ₂ O, $I = 0.1$ (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁵ M	1117

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Lu ³⁺		4.82x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁶ M	1117
	Lu ³⁺		5.49x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁶ M	1117
	Lu ³⁺		6.52x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁶ M	1117
	Lu ³⁺		7.22x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁶ M	1117
	Lu ³⁺		7.73x10 ⁻²			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁶ M	1117
	Lu ³⁺		1.95x10 ⁻² + 578.9[H ⁺]/ (1+5.98x 10 ³ [H ⁺])			Spec	35	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁶ M	1117
	Lu ³⁺		3.59x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 0.84x10 ⁻⁶ M	1117
	Lu ³⁺		4.49x10 ⁻²			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 1.85x10 ⁻⁶ M	1117
	Lu ³⁺		5.66x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 3.76x10 ⁻⁶ M	1117
	Lu ³⁺		7.66x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 7.07x10 ⁻⁶ M	1117
	Lu ³⁺		9.11x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 9.66x10 ⁻⁶ M	1117
	Lu ³⁺		10.9x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 14.73x10 ⁻⁶ M	1117
	Lu ³⁺		12.5x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 20.37x10 ⁻⁶ M	1117
	Lu ³⁺		13.6x10 ⁻³			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = 24.66x10 ⁻⁶ M	1117
	Lu ³⁺		2.91x10 ⁻² + 875.7[H ⁺]/ (1+4.15x 10 ³ [H ⁺])			Spec	45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) 0.005 M acetate, [H ⁺] = (0.84-24.66)x10 ⁻⁶ M	1117
	Lu ³⁺			33.5(d)	-169(d)	Spec	15-45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) (for <i>k</i>)	1117
	Lu ³⁺			65.3(d)	-52.7(d)	Spec	15-45	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) (for <i>k_H</i>)	1117
	Lu ³⁺		1.66x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 1.25x10 ⁻² M acetate	1117
	Lu ³⁺		1.78x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 2.0x10 ⁻² M acetate	1117
	Lu ³⁺		1.75x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 3.75x10 ⁻² M acetate	1117
	Lu ³⁺		1.65x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.1 (NaClO ₄) [H ⁺] = 1.54x10 ⁻⁶ M, 5.0x10 ⁻² M acetate	1117
	Lu ³⁺		1.97x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁶ M, 0.05 M Li ClO ₄	1117
	Lu ³⁺		1.75x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁶ M, 0.2 M Li ClO ₄	1117
	Lu ³⁺		1.48x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.005 M acetate [H ⁺] = 1.47x10 ⁻⁶ M, 0.4 M Li ClO ₄	1117
	Lu ³⁺		1.21x10 ⁻²			Spec	25	H ₂ O, <i>I</i> = 0.005 M Acetate [H ⁺] = 1.47x10 ⁻⁶ M, 0.6 M Li ClO ₄	1117
	Cu ²⁺	1.2x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 3.75 (buffer)	1118
	Cu ²⁺	1.8x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.0 (buffer)	1118
	Cu ²⁺	2.5x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.25 (buffer)	1118
	Cu ²⁺	3.2x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.5 (buffer)	1118
	Cu ²⁺	4.3x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.75 (buffer)	1118

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^\ddagger, a$ kJ/mol	$\Delta S^\ddagger, a$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref	
CHART XIII										
A ₄ L5C5-1	Ni ²⁺		1.32x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 4.80x10 ⁻² M	1119	
	Ni ²⁺		3.73x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 7.73x10 ⁻² M	1119	
	Ni ²⁺		6.09x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 9.67x10 ⁻² M	1119	
	Ni ²⁺		9.11x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 11.60x10 ⁻² M	1119	
	Ni ²⁺		14.03x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 14.51x10 ⁻² M	1119	
	Cu ²⁺		1.92x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 0.193 M	1119	
	Cu ²⁺		3.71x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 0.290 M	1119	
	Cu ²⁺		7.72x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 0.387 M	1119	
	Cu ²⁺		10.99x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 0.483 M	1119	
	Cu ²⁺		17.43x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 0.580 M	1119	
Cu ²⁺	1.4x10 ⁶ (CuH ₂ L)			54.4	54.4	Spec	25	H ₂ O, 0.2 M NaClO ₄ , 3.5 < pH < ~4.5 (acetate buffer)		
Cu ²⁺	9.7x10 ⁶ (CuH ₂ L)					Spec	25	[Cu(O ₂ CCH ₃) ⁺ + H ₂ L ²⁺] H ₂ O, 0.2 M NaClO ₄ , 1.8 < pH < 2.5 (unbuffered), (Cu ²⁺ + H ₂ L ²⁺)	432	
A ₂ T ₃ L5C5-1	Cu ²⁺	25.94				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 1.0	260	
	Cu ²⁺	21.59				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 2.0	260	
	Cu ²⁺	5.014x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.55	260	
	Cu ²⁺	5.71x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.6	260	
	Cu ²⁺	6.66x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260	
	Cu ²⁺	7.02x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.75	260	
	Cu ²⁺	8.06x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.8	260	
	Cu ²⁺	9.47x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260	
	Cu ²⁺	10.28x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.0	260	
	Cu ²⁺	13.19x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260	
AT ₄ L5C5-1	Cu ²⁺	4.298x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.55	260	
	Cu ²⁺	6.501x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.7	260	
	Cu ²⁺	9.94x10 ³				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 4.9	260	
	Cu ²⁺	1.256x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.1	260	
	Cu ²⁺	1.98x10 ⁴				Spec	25	H ₂ O, 0.1 M NaClO ₄ , pH 5.3	260	
B ₂ A ₂ L6C4-1	CHART XIV									
	Ni ²⁺		6.7x10 ⁻³			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, Cu ²⁺ as scavenger	1113	
	Ni ²⁺		0.35			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 3.60x10 ⁻² M 1,10-Phenanthroline	1113	
	Ni ²⁺		0.37			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 3.88x10 ⁻² M 1,10-Phenanthroline	1113	
	Ni ²⁺		0.43			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 5.49x10 ⁻² M 1,10-Phenanthroline	1113	
	Ni ²⁺		0.42			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 5.50x10 ⁻² M 1,10-Phenanthroline	1113	
	Ni ²⁺		0.44			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 6.45x10 ⁻² M 1,10-Phenanthroline	1113	
Ni ²⁺		0.45			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 6.60x10 ⁻² M 1,10-Phenanthroline	1113		

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	ΔH^{*o} kJ/mol	ΔS^{*o} J/K·mol	method ^b	T, °C	conditions ^c	ref
	Ni ²⁺		0.56			Spec	25	95% MeOH, 0.1 M Me ₄ NCl, 13.20x10 ⁻² M 1,10-Phenanthroline	1113
A ₄ 16C4-diene-1	Ni ²⁺		2.2x10 ⁻⁴⁺ 0.16x10 ⁻⁴ [H ⁺]	116	-299	Spec	50	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1120
	Ni ²⁺		3.36x10 ⁻⁴⁺ 0.41x10 ⁻⁴ [H ⁺]			Spec	60	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1120
	Ni ²⁺		4.12x10 ⁻⁴⁺ 0.64x10 ⁻⁴ [H ⁺]			Spec	65	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1120
	Ni ²⁺		5.02x10 ⁻⁴⁺ 0.98x10 ⁻⁴ [H ⁺]			Spec	70	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1120
	Ni ²⁺		5.15x10 ⁻⁴⁺ 0.65x10 ⁻⁴ [H ⁺]			Spec	65	H ₂ O, I = 1.5 (NaClO ₄ + 0.1-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1120
	Cu ²⁺		10.9x10 ⁻⁴	29.4	-215.5	Spec	55	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄)	1120
	Cu ²⁺		13.0x10 ⁻⁴			Spec	60	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄)	1120
	Cu ²⁺		15.5x10 ⁻⁴			Spec	60	H ₂ O, I = 1.5 (NaClO ₄ + 0.1-1.0 M HClO ₄)	1120
	Cu ²⁺		15.4x10 ⁻⁴			Spec	65	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄)	1120
	Cu ²⁺		18.2x10 ⁻⁴			Spec	70	H ₂ O, I = 1.0 (NaClO ₄ + 0.1-1.0 M HClO ₄)	1120
				CHART XV					
16C5-7	Na ⁺	1.35x10 ⁸	1820	12.5		NMR	-10	Py, I < 0.08 (anion = ClO ₄)	465
B ₂ 16C5-1	H ⁺	4.05x10 ¹⁰	5.10x10 ⁴			EJ	25	MeOH/H ₂ O (8:2/v:v)	468
	H ⁺	5.31x10 ¹⁰	1.36x10 ⁸			EJ	25	H ₂ O	468
	Na ⁺	1.9x10 ¹⁰				EJ	25	MeOH/H ₂ O (99:1/w:w)	469
				CHART XVI					
A ₆ 16C5-1	Cu ²⁺	2.4x10 ⁸ (CuH ₂ L)		45.6	29.3	Spec	25	H ₂ O, 0.2 M NaClO ₄ , 3.5 < pH < ~4.5 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + H ₂ L ²⁺]	432
	Cu ²⁺	5.6x10 ² (CuH ₂ L)		39.3	-58.6	Spec	25	H ₂ O, 0.2 M NaClO ₄ , 3.5 < pH < ~4.5 (acetate buffer) [Cu(O ₂ CCH ₃) ⁺ + H ₃ L ³⁺]	432
	Cu ²⁺	3.1x10 ⁸ (CuH ₂ L)				Spec	25	H ₂ O, 0.2 M NaClO ₄ , 1.8 < pH < 2.5 (unbuffered) (Cu ²⁺ + H ₂ L ²⁺)	432
	Cu ²⁺	~1 (CuH ₂ L)				Spec	25	H ₂ O, 0.2 M NaClO ₄ , 1.8 < pH < 2.5 (unbuffered) (Cu ²⁺ + H ₃ L ³⁺)	432
A ₄ T16C5-1	Co ²⁺	2.27				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 4.68	180
	Co ²⁺	2.86				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 4.96	180
	Co ²⁺	4.34				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.2 M acetate buffer, pH 5.30	180
	Co ²⁺	1.78				Polg	25	H ₂ O, 0.2 M NaClO ₄ , 0.05 M acetate buffer, pH 5.30	180
A ₆ 16C6-1	Ni ²⁺		0.8x10 ⁻⁴			Spec	50	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄)	1121
	Ni ²⁺		2.0x10 ⁻⁴			Spec	60	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄)	1121
	Ni ²⁺		1.99x10 ⁻⁴			Spec	60	H ₂ O, I = 0.5 (NaClO ₄ + HClO ₄)	1121
	Ni ²⁺		6.0x10 ⁻⁴			Spec	70	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄)	1121
	Ni ²⁺			100.38(d)	-17.76(d)	Spec	50-70	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄)	1121
	Cu ²⁺		2.2x10 ⁻⁴ + 2.0x10 ⁻⁴ [H ⁺]			Spec	50	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1121
	Cu ²⁺		3.75x10 ⁻⁴ + 2.72x10 ⁻⁴ [H ⁺]			Spec	55	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1121
	Cu ²⁺		6.5x10 ⁻⁴ + 4.1x10 ⁻⁴ [H ⁺]			Spec	60	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄) ($k_d = k + k_H[H^+]$)	1121
	Cu ²⁺		6.35x10 ⁻⁴ + 3.1x10 ⁻⁴ [H ⁺]			Spec	60	H ₂ O, I = 0.5 (NaClO ₄ + HClO ₄) ($k_d = k + k_H[H^+]$)	1121
	Cu ²⁺			152.46(d)	-95.33(d)	Spec	50-60	H ₂ O, I = 1.0 (NaClO ₄ + 0.01-1.0 M HClO ₄)	1121

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	T, °C	conditions ^c	ref	
CHART XVII										
Thiodiazolo(1,3-B)A ₅ 16C7-1	Co ²⁺		2.3x10 ⁻⁴		-220(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
	Cu ²⁺		5.3x10 ⁻⁴		-230(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
	Zn ²⁺		4.5x10 ⁻⁴		-204(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
(Thiodiazolo) ₂ A ₅ 16C8-1	Co ²⁺		1.9x10 ⁻⁴		-261(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
	Cu ²⁺		0.9x10 ⁻⁴		-226(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
	Zn ²⁺		1.6x10 ⁻⁴		-229(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
ThiodiazoloPyA ₅ 16C8-1	Co ²⁺		1.8x10 ⁻⁴		-246(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
	Cu ²⁺		1.1x10 ⁻⁴		-228(d)	Spec	25	H ₂ O (acid catalyzed)	1122	
CHART XVIII										
B17C5-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		9x10 ⁸			NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371	
Fur17C5-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		7x10 ⁸			NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371	
CHART XIX										
B ₂ A ₃ 17C5-1	Ni ²⁺		0.37x10 ⁻¹			Spec	8	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748	
	Ni ²⁺		0.78x10 ⁻¹			Spec	15	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748	
	Ni ²⁺		2.03x10 ⁻¹	68.9(d)	29.9(d)	Spec	25	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748	
	Ni ²⁺		3.33x10 ⁻¹			Spec	30	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748	
	A ₄ 17C5-1	Ni ²⁺		0.48x10 ⁻³			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 2.10x10 ⁻⁶ M	1123
		Ni ²⁺		1.39x10 ⁻³	44.0(d)	-109(d)	Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 6.0x10 ⁻⁶ M	1123
		Ni ²⁺		2.38x10 ⁻³			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 9.9x10 ⁻³ M	1123
		Ni ²⁺		4.98x10 ⁻³			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 20.7x10 ⁻³ M	1123
		Ni ²⁺		9.42x10 ⁻³			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 40.6x10 ⁻³ M	1123
		Ni ²⁺		1.78x10 ⁻³			Spec	29.5	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 6.0x10 ⁻³ M	1123
Ni ²⁺			2.39x10 ⁻³			Spec	33	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 6.0x10 ⁻³ M	1123	
Ni ²⁺			3.15x10 ⁻³			Spec	39	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 6.0x10 ⁻³ M	1123	
Cu ²⁺			1.59			Spec	20	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 4.20x10 ⁻² M	1123	
Cu ²⁺			0.50			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 2.05x10 ⁻² M	1123	
Cu ²⁺		2.35	29.8(d)	-86(d)	Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 4.20x10 ⁻² M	1123		
Cu ²⁺		4.31			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 6.10x10 ⁻² M	1123		
Cu ²⁺		6.69			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 7.90x10 ⁻² M	1123		
Cu ²⁺		8.98			Spec	25	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 8.90x10 ⁻² M	1123		
Cu ²⁺		2.63			Spec	29.5	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 4.20x10 ⁻² M	1123		
Cu ²⁺		3.00			Spec	35	H ₂ O, I = 0.1 (NaClO ₄), [H ⁺] = 4.20x10 ⁻² M	1123		
Cu ²⁺	4.9x10 ⁸ (CuH ₂ L)			41.8	20.9	Spec	25	H ₂ O, 0.2 M NaClO ₄ , 3.5 < pH < ~4.35 (acetate buffer), [Cu(O ₂ CCH ₃) ⁺ + H ₂ L ²⁺]	432	
Cu ²⁺	8.7x10 ⁸ (CuH ₃ L)			30.5	-62.8	Spec	25	H ₂ O, 0.2 M NaClO ₄ , 3.5 < pH < ~4.5 (acetate buffer), [Cu(O ₂ CCH ₃) ⁺ + H ₃ L ³⁺]	432	
Cu ²⁺	8.6x10 ⁸ (CuH ₂ L)					Spec	25	H ₂ O, 0.2 M NaClO ₄ , 1.8 < pH < 2.5 (unbuffered), (Cu ²⁺ + H ₂ L ²⁺)	432	
Cu ²⁺	81 (CuH ₃ L)					Spec	25	H ₂ O, 0.2 M NaClO ₄ , 1.8 < pH < 2.5 (unbuffered), (Cu ²⁺ + H ₃ L ³⁺)	432	
CHART XX										
Spher-18C-1	Li ⁺	7.5x10 ⁴	<1.5x10 ⁻¹²			NMR	69.8	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
	Na ⁺	4.1x10 ⁵	3.4x10 ⁻⁹	105(d)	-56(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
	Na ⁺		1.0x10 ⁻⁶			NMR	69.8	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
	Na ⁺		5.6x10 ⁻⁶			NMR	84.8	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
	Na ⁺		2.1x10 ⁻⁵			NMR	99.8	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494	
Spher-B18C2-1	K ⁺	2x10 ⁹	14			NMR	25	D ₂ O sat'd CDCl ₃	496	

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
CHART XXIII									
(1,3-B)18C5-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		5.4x10 ⁸			NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371
(1,3-B)18C5-3	H ⁺	4.17x10 ¹⁰	6.61x10 ²			EJ	25	H ₂ O	468
	H ⁺	1.63x10 ¹⁰	2.82x10 ²			EJ	25	MeOH·H ₂ O (8:2/v:v)	468
(Nap) ₂ 18C5-1	Na ⁺		1.1x10 ⁴			NMR	-13	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 1)	1124
	Na ⁺		1.6x10 ⁴			NMR	7	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 1)	1124
	Na ⁺		2.2x10 ⁴			NMR	27	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 1)	1124
	Na ⁺		5x10 ⁶			NMR	-13	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 3)	1124
	Na ⁺		1.5x10 ⁶			NMR	7	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 3)	1124
	Na ⁺		3.0x10 ⁶			NMR	24	Py/CH ₂ Cl ₂ /MeOH·d ₃ (45:45:10), anion = BPh ₄ ⁻ (mechanism 3)	1124
(Nap) ₂ 18C5-2	Na ⁺		3364			NMR	-13	Py·CH ₂ Cl ₂ (1:1) (anion = BPh ₄ ⁻)	1125
(Nap) ₂ 18C5-3	Na ⁺		4514			NMR	-32	Py·CH ₂ Cl ₂ (1:1) (anion = BPh ₄ ⁻)	1125
CHART XXV									
18C6-1	Li ⁺	4.8x10 ⁹	2.7x10 ⁶			US	25	1,3-Dioxolane (anion = AsF ₆ ⁻), [step 1: Li ⁺ + L = Li ⁺ ...L]	291
	Li ⁺	3.9x10 ⁸	4.7x10 ⁷			US	25	1,3-Dioxolane (anion = AsF ₆ ⁻), [step 2&3: Li ⁺ ...L = (LiL) ⁺]	291
	Li ⁺ , AsF ₆ ⁻	1.5x10 ⁸	1.4x10 ⁷			US	25	DME	97
	Li ⁺	1.45x10 ⁶				US	25	PC [step 2: Li ⁺ ...L = Li ⁺ L]	1126
	Li ⁺	6.3x10 ⁶				US	25	PC [step 3: Li ⁺ L = (LiL) ⁺]	1126
	Na ⁺	5.9x10 ⁸		14.2	-31.4	US	40	DMF [step 2: Na ⁺ ...L = Na ⁺ L]	529
	Na ⁺		3.8x10 ⁸	32	-65	NMR	28.5	MeCN (mechanism 1)	1127
	Na ⁺		2.6x10 ⁶			NMR	28.5	MeCN (mechanism 2)	1127
	Na ⁺		6.06x10 ⁴			NMR	-8	Me ₂ CO (anion = SCN ⁻)	1128
	Na ⁺		4.34x10 ⁶	36.7(d)	-14.0(d)	NMR	25	Me ₂ CO (anion = SCN ⁻)	1128
	Na ⁺		1.48x10 ⁴	44	-21	NMR	28.5	Me ₂ CO (mechanism 1)	1127
	Na ⁺ , Br ⁻	1x10 ⁸	4.3x10 ⁶	4.60	-75.3	NMR	25	MeNH ₂	301
	Na ⁺ , Br ⁻			24.7(d)	-54.4(d)	NMR	25	MeNH ₂	301
	Na ⁺		4.2x10 ⁸			NMR	-8	MeOH (anion = SCN ⁻)	1128
	Na ⁺		7.2x10 ⁴	53.6(d)	27.8(d)	NMR	25	MeOH (anion = SCN ⁻)	1128
	Na ⁺	7.6x10 ⁶	3.65x10 ⁴	38.1(d)	-30.1(d)	NMR	25	MeOH (anion = SCN ⁻) (mechanism 1)	541
	Na ⁺	2.8x10 ⁸		15.1	-32.2	US	25	MeOH [step 2: Na ⁺ ...L = Na ⁺ L]	529
	Na ⁺	1.6x10 ⁸		7.53	-84.9	US	25	MeOH [step 3: Na ⁺ L = (NaL) ⁺]	529
	Na ⁺		>6x10 ⁶			NMR	28.5	NMe (anion = BPh ₄ ⁻), (mechanism 2)	1115
	Na ⁺	>1.3x10 ⁹	1.30x10 ⁶	16.7(d)	-90.8(d)	NMR	25	PC (anion = BPh ₄ ⁻), (mechanism 2)	541
	Na ⁺		1.6x10 ⁸	54	-5	NMR	28.5	PC (mechanism 1)	1127
	Na ⁺		6.9x10 ⁶	35	-16	NMR	28.5	PC (mechanism 2)	1127
	Na ⁺		7.16x10 ²			NMR	-8	Py (anion = SCN ⁻)	1128
	Na ⁺		1.03x10 ⁴	50.5(d)	1.4(d)	NMR	25	Py (anion = SCN ⁻)	1128
	Na ⁺		5.3x10 ²	49	-30	NMR	28.5	Py (mechanism 1)	1127
	Na ⁺		2.0x10 ⁴			NMR	28.5	Py (mechanism 2)	1127
	Na ⁺		3.56x10 ⁸	38.7(d)	-47.3(d)	NMR	25	60 mol% THF·MeOH (anion = BPh ₄ ⁻), (mechanism 1)	541
	Na ⁺		9.15x10 ²	40.4(d)	-52.7(d)	NMR	25	80 mol% THF·PC (anion = BPh ₄ ⁻), (mechanism 1)	541
	Na ⁺		5.00x10 ⁴	35.7(d)	-35.1(d)	NMR	25	40 mol% THF·PC (anion = BPh ₄ ⁻), (mechanism 2)	541
	Na ⁺		53	47.3(d)	-52.3(d)	NMR	25	THF (anion = BPh ₄ ⁻), (mechanism 1)	1129
	Na ⁺		9.16x10 ⁴	11.7(d)	-113(d)	NMR	25	THF (anion = SCN ⁻), (mechanism 2)	1129
	K ⁺	1.8x10 ⁸		16.3	-32.2	US	25	DMF (anion = ClO ₄ ⁻), [step 2: K ⁺ ...L = K ⁺ L]	552

Table V (Continued)

ligand	cation	k_f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	T_f , °C	conditions ^c	ref
	K ⁺	9.1x10 ⁶		14.2	-64.0	US	25	DMF (anion = ClO ₄ ⁻), [step 3: K ⁺ L = (KL) ⁺]	552
	K ⁺	2.5x10 ⁶		16.3	-32.2	US	40	DMF [step 2: K ⁺ ...L = K ⁺ L]	529
	K ⁺	1.2x10 ⁷		14.2	-64.0	US	40	DMF [step 3: K ⁺ L = (KL) ⁺]	529
	K ⁺	5.58x10 ⁷	49			PJ	25	MeOH, I → 0	155
	Ca ²⁺	7.4x10 ⁶	10.2x10 ²			PJ	25	MeOH, I → 0	155
	Sr ²⁺	3.50x10 ⁷	80			PJ	25	MeOH, I → 0	155
	Ba ²⁺		7.5x10 ⁶	17.2	-18.4	US	25	DMF [step 2: Ba ²⁺ ...L = Ba ²⁺ L]	567
	Ba ²⁺		7.5x10 ⁷	30.1	7.53	US	25	DMF [step 3: Ba ²⁺ L = (BaL) ²⁺]	567
	Ba ²⁺	4.88x10 ⁶	45			PJ	25	MeOH, I → 0	564
	Ag ⁺	2.1x10 ⁷	2.3x10 ⁶	23.4(d)	-6.69(d)	US	25	DMF (anion = ClO ₄ ⁻), [step 2: Ag ⁺ ...L = Ag ⁺ L]	552
	Ag ⁺		1.8x10 ⁶			US	25	DMF (anion = ClO ₄ ⁻), [step 3: Ag ⁺ L = (AgL) ⁺]	552
	Hg ²⁺ , 2CN ⁻	3.1x10 ⁻²				NMR	23	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v) 1130	1130
	Hg ²⁺ , 2CN ⁻	1.7x10 ⁻²				NMR	23	Me ₂ CO-d ₆ /CDCl ₃ (1:0.8/v:v)	1130
	Tl ⁺	1.8x10 ⁶	9.8x10 ⁶	20.5(d)	-42.3(d)	US	25	DMF (anion = ClO ₄ ⁻), [step 2: Tl ⁺ ...L = Tl ⁺ L]	552
	Tl ⁺		2.1x10 ⁶			US	25	DMF (anion = ClO ₄ ⁻), [step 3: Tl ⁺ L = (TlL) ⁺]	552
	Tl ⁺		3.7x10 ⁷			NMR	5	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		4.2x10 ⁷			NMR	15	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		4.1x10 ⁷			NMR	20	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		4.1x10 ⁷	~5.86	~-79.5	NMR	25	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		4.4x10 ⁷			NMR	30	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		4.7x10 ⁷			NMR	35	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		5.6x10 ⁷			NMR	40	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		7x10 ⁷			NMR	45	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		8x10 ⁷			NMR	50	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	Tl ⁺		6.8x10 ⁷			NMR	55	MeCN (anion = ClO ₄ ⁻), (mechanism 2)	1131
	UO ₂ ²⁺	39.7				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 5.16x10 ⁻³ M	1132
	UO ₂ ²⁺	44.7				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 6.60x10 ⁻³ M	1132
	UO ₂ ²⁺	50.7				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 7x10 ⁻³ M	1132
	UO ₂ ²⁺	59.3				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 9x10 ⁻³ M	1132
	UO ₂ ²⁺	62.0				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 1.03x10 ⁻² M	1132
	UO ₂ ²⁺	64.0				Spec	25	MeCN, 0.1 (Et ₄ NClO ₄) (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 1.40x10 ⁻² M	1132
	UO ₂ ²⁺	64.0				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 1.55x10 ⁻² M	1132
	UO ₂ ²⁺	51.0				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 2.06x10 ⁻² M	1132
	UO ₂ ²⁺	43.7				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 2.30x10 ⁻² M	1132
	UO ₂ ²⁺	37.3				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 2.58x10 ⁻² M	1132

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	T, °C	conditions ^c	ref
	UO ₂ ²⁺	29.3				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 3.03x10 ⁻² M	1132
	UO ₂ ²⁺	23.3				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = 3.50x10 ⁻² M	132
	UO ₂ ²⁺	8.5x10 ³ [L]/ (1+10[L])+ 2.5x10 ² [L] ² + 2.5x10 ⁶ [L] ³)				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 1: formation of the first UO ₂ ²⁺ + L bond), [L] = (5.16-35)x 10 ⁻³ M	1132
	UO ₂ ²⁺	1.50				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 5.16x10 ⁻³ M	1132
	UO ₂ ²⁺	3.57				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 1.03x10 ⁻² M	1132
	UO ₂ ²⁺	5.23				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 1.55x10 ⁻² M	1132
	UO ₂ ²⁺	6.13				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 2.06x10 ⁻² M	1132
	UO ₂ ²⁺	7.00				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 2.58x10 ⁻² M	1132
	UO ₂ ²⁺	8.13				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = 3.03x10 ⁻² M	1132
	UO ₂ ²⁺	4x10 ² [L]/ (1+25[L])				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 2: formation of an "exclusive" complex) [L] = (5.16-30.3)x10 ⁻³ M	1132
	UO ₂ ²⁺	0.057				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 5.16x10 ⁻³ M	1132
	UO ₂ ²⁺	0.062				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 1.03x10 ⁻² M	1132
	UO ₂ ²⁺	0.060				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 1.55x10 ⁻² M	1132
	UO ₂ ²⁺	0.069				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 2.06x10 ⁻² M	1132
	UO ₂ ²⁺	0.061				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 2.58x10 ⁻² M	1132
	UO ₂ ²⁺	0.066				Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (step 3: formation of an "inclusive" complex) [L] = 3.03x10 ⁻² M	1132
	UO ₂ ²⁺		5.43x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 2.49x10 ⁻² M	1132
	UO ₂ ²⁺		5.04x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 3.00x10 ⁻² M	1132
	UO ₂ ²⁺		4.16x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 3.49x10 ⁻² M	1132
	UO ₂ ²⁺		3.94x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 4.00x10 ⁻² M	1132
	UO ₂ ²⁺		3.80x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 4.51x10 ⁻² M	1132
	UO ₂ ²⁺		3.33x10 ⁻²			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = 5.02x10 ⁻² M	1132
	UO ₂ ²⁺		0.164/(1+79[Na ⁺])			Spec	25	MeCN, 0.1 M Et ₄ NClO ₄ (UO ₂ L ²⁺ +Na ⁺ → NaL ⁺ +UO ₂ ²⁺) [Na ⁺] = (2.49-5.02)x10 ⁻² M	1132

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K-mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	UO ₂ ²⁺		0.41/(1+890 x[Na ⁺])			Spec	25	PC, 0.1 M Et ₄ NClO ₄ , [Na ⁺] = (0.5-5)x10 ⁻² M (UO ₂ L ²⁺ + Na ⁺ → UO ₂ ²⁺ + NaL ⁺)	1133
	UO ₂ ²⁺	930x145[L]/ (1+145[L]+ 145x420[L] ²)				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 1: formation of UO ₂ L + UO ₂ L ₂ intermediate outer sphere complexes) [L] = (0.1-3)x10 ⁻² M	1134
	UO ₂ ²⁺	18/(1+90[L])				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 2: UO ₂ L + UO ₂ L ₂ intermediate outer sphere complexes → UO ₂ L + UO ₂ L ₂ "external" complexes → UO ₂ L "exclusive" complex) [L] = (0.1-3)x10 ⁻² M	1134
	UO ₂ ²⁺	0.022				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 3: UO ₂ L "exclusive" → UO ₂ L "inclusive" complex)	1134
	NH ₄ ⁺	1.6x10 ⁸		20.9	-17.2	US	25	DMF (anion = ClO ₄ ⁻), [step 2: NH ₄ ⁺ ...L = NH ₄ ⁺ L]	552
	NH ₄ ⁺	3.2x10 ⁷		8.37	-73.2	US	25	DMF (anion = ClO ₄ ⁻), [step 3: NH ₄ ⁺ L = (NH ₄ L) ⁺]	552
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	65				NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.6x10 ⁹	70			NMR	20	CHCl ₃ (anion = PF ₆ ⁻)	509
CHART XXIX									
Cy ₂ 18C6-1	Na ⁺		4.0x10 ⁶	8.79(d)	-108.8(d)	NMR	25	THF (anion = SCN ⁻), (mechanism 2)	1135
Cy ₂ 18C6-2	Na ⁺		2.2x10 ⁶	7.95(d)	-97.9(d)	NMR	25	THF (anion = SCN ⁻), (mechanism 2)	1135
Cy ₂ 18C6-3	Na ⁺	4.1x10 ⁶				US	40	DMF [step 2: Na ⁺ ...L = Na ⁺ L]	529
	Na ⁺	6.6x10 ⁶		24.3	5.02	US	25	MeOH [step 2: Na ⁺ ...L = Na ⁺ L]	529
	K ⁺	2.6x10 ⁶		18.0	-27.2	US	40	DMF [step 2: K ⁺ ...L = K ⁺ L]	529
	K ⁺	1.2x10 ⁷		10.9	-74.9	US	40	DMF [step 3: K ⁺ L = (KL) ⁺]	529
CHART XXX									
B18C6-1	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.55x10 ²				NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371
B18C6-27	Na ⁺	9.96x10 ²				NMR	-13.3	DMF (mechanism 1)	1136
	Na ⁺	6.80x10 ²				NMR	-16.6	DMF (mechanism 1)	1136
	Na ⁺	4.65x10 ²				NMR	-19.8	DMF (mechanism 1)	1136
	Na ⁺	3.17x10 ²				NMR	-23	DMF (mechanism 1)	1136
	Na ⁺	1.85x10 ³				NMR	-13.3	DMF (mechanism 2)	1136
	Na ⁺	1.39x10 ³				NMR	-16.6	DMF (mechanism 2)	1136
	Na ⁺	1.02x10 ³				NMR	-19.8	DMF (mechanism 2)	1136
	Na ⁺	7.90x10 ³				NMR	-23	DMF (mechanism 2)	1136
CHART XXXI									
B ₂ 18C6-1	Na ⁺	3.8x10 ⁶		12.6	-41.0	US	40	DMF [step 2: Na ⁺ ...L = Na ⁺ L]	529
	Na ⁺	2.3x10 ²				NMR	-15	MeCN, 0.01 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	4.5x10 ²				NMR	-5	MeCN, 0.01 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	2.2x10 ³				NMR	21	MeCN, 0.01 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	5.2x10 ³				NMR	35	MeCN, 0.01 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	1.1x10 ⁴				NMR	49	MeCN, 0.01 M NaBPh ₄ (mechanism 1)	654
	Na ⁺			40	-44	NMR	-15to60	MeCN, (anion = BPh ₄ ⁻) (mechanism 1)	654
	Na ⁺			40	-44	NMR	-15to60	MeCN, (anion = BF ₄ ⁻) (mechanism 1)	654
	Na ⁺	12.0				NMR	-14	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	1.3x10 ⁴				NMR	-14	NMe, 0.0088 M NaBPh ₄ (mechanism 2)	654
	Na ⁺	5.0				NMR	-2	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	1.1x10 ⁴				NMR	-2	NMe, 0.0088 M NaBPh ₄ (mechanism 2)	654
	Na ⁺	1.7x10 ²				NMR	21	NMe, 0.0042 M NaBPh ₄ (mechanism 1)	654
	Na ⁺	0.6x10 ⁴				NMR	21	NMe, 0.0042 M NaBPh ₄ (mechanism 2)	654
	Na ⁺	1.8x10 ²				NMR	21	NMe, 0.02 M NaBPh ₄ (mechanism 1)	654

Table V (Continued)

ligand	cation	$k^f, M^{-1} s^{-1}$	k_d, s^{-1}	ΔH^{*a} kJ/mol	ΔS^{*a} J/K.mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Na ⁺		1.5x10 ⁴			NMR	21	NMe, 0.02 M NaBPh ₄ (mechanism 2)	654
	Na ⁺		1.7x10 ²			NMR	21	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺		2.3x10 ⁴			NMR	21	NMe, 0.0088 M NaBPh ₄ (mechanism 2)	654
	Na ⁺		4.1x10 ²			NMR	40	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺		4x10 ⁴			NMR	40	NMe, 0.0088 M NaBPh ₄ (mechanism 2)	654
	Na ⁺		9.4x10 ²			NMR	58	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺		6x10 ⁴			NMR	58	NMe, 0.0088 M NaBPh ₄ (mechanism 2)	654
	Na ⁺			37	-78	NMR	-15to60	NMe, 0.0088 M NaBPh ₄ (mechanism 1)	654
	Na ⁺		1.0x10 ²			NMR	21	NMe, 0.005 M NaPF ₆ (mechanism 1)	654
	Na ⁺		1.7x10 ⁴			NMR	21	NMe, 0.005 M NaPF ₆ (mechanism 2)	654
	Na ⁺		1.0x10 ²			NMR	21	NMe, 0.0085 M NaPF ₆ (mechanism 1)	654
	Na ⁺		1.7x10 ⁴			NMR	21	NMe, 0.0085 M NaPF ₆ (mechanism 2)	654
	Na ⁺		1.3x10 ²			NMR	21	NMe, 0.021 M NaPF ₆ (mechanism 1)	654
	Na ⁺		1.7x10 ⁴			NMR	21	NMe, 0.021 M NaPF ₆ (mechanism 2)	654
	K ⁺	1.1x10 ⁶		26.4	-8.37	US	40	DMF [step 2: K ⁺ ...L = K ⁺ L]	529
	Cs ⁺	2.75x10 ³	6.03x10 ⁻²			Cond	20	CHCl ₃ (anion = picrate)	652
	Eu ³⁺	0.07/min				Spec	20	n-BuOH (anion = F ⁻)	1137
	Eu ³⁺	0.049/min				Spec	16	CH ₂ Cl ₂ (anion = F ⁻)	1137
	Eu ³⁺	0.02/min				Spec	20	Hexane (anion = F ⁻)	1137
	Eu ³⁺	0.027/min				Spec	20	MeOH (anion = F ⁻)	1137
	Hg ²⁺ , 2CN ⁻	2.75x10 ⁻⁴				NMR	23	Me ₂ CO-d ₆ /CDCl ₃ (1:0.8/v:v)	1130
B ₂ 18C6-22	t-C ₄ H ₉ NH ₃ ⁺		8.5x10 ²			NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371
	Na ⁺		9.7x10 ²			NMR	5	MeOH (anion = I ⁻)	1138
				CHART XXXII					
Fur18C6-1	t-C ₄ H ₉ NH ₃ ⁺		1.1x10 ³			NMR	20	CDCl ₃ (anion = PF ₆ ⁻)	371
				CHART XXXIV					
A ₂ 18C6-1	Na ⁺		2.34x10 ⁶	5.44(d)	-161.5(d)	NMR	25	THF (anion = SCN ⁻), (mechanism 1)	1135
	Na ⁺		1.74x10 ³	5.86(d)	-161.1(d)	NMR	0.0	THF (anion = SCN ⁻), (mechanism 1)	1135
	Na ⁺		9.8x10 ⁴	36.8(d)	10.5(d)	NMR	-40	THF (anion = SCN ⁻), (mechanism 2)	1135
	Cs ⁺		2.31x10 ⁷	21.3(d)	-19.2(d)	NMR	15	NMe (mechanism 2)	1139
	Cs ⁺		3.9x10 ²			NMR	25	NMe (mechanism 1)	1139
	Ca ²⁺		10.4 + 262[H ⁺]			Cond	-5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H, (k _d = k + k _H [H ⁺])	692
	Ca ²⁺		15.1 + 356[H ⁺]			Cond	0	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Ca ²⁺		21.6 + 460[H ⁺]			Cond	5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Ca ²⁺		30.4 + 699[H ⁺]			Cond	10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Ca ²⁺		42.7 + 835[H ⁺]			Cond	15	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Ca ²⁺	2.5x10 ⁶	80.3 + 1489[H ⁺]			Ext	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Ca ²⁺			42.8(d)	-64.8(d)	Cond	25	MeOH (for k)	692
	Ca ²⁺			36.1(d)	-63.4(d)	Cond	25	MeOH (for k _H)	692
	Ca ²⁺	1x10 ⁶	30.2	49.0(d)	-52.3(d)	Cond	25	MeOH	413
	Ca ²⁺		138			Cond	25	MeOH (k _d = k _H)	413
	Sr ²⁺		0.49 + 109[H ⁺]			Cond	5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Sr ²⁺		0.89 + 139[H ⁺]			Cond	10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Sr ²⁺		1.7 + 156[H ⁺]			Cond	15	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Sr ²⁺		2.7 + 200[H ⁺]			Cond	20	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692
	Sr ²⁺	2.1x10 ⁶	4.23 + 249[H ⁺]			Cond	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H (k _d = k + k _H [H ⁺])	692

Table V (Continued)

ligand	cation	$k^f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{*f}, kJ/mol$	$\Delta S^{*f}, J/K\cdot mol$	method ^b	$T, ^\circ C$	conditions ^c	ref
	Sr ²⁺			72.7(d)	11.4(d)	Cond	25	MeOH (for k)	692
	Sr ²⁺			25.3(d)	11.4(d)	Cond	25	MeOH (for k_H)	692
	Sr ²⁺	5.0x10 ⁵	1.10	57.1(d)	-52.3(d)	Cond	25	MeOH	413
	Sr ²⁺		132			Cond	25	MeOH ($k_d = k_H$)	413
	Ba ²⁺		1.4 + 341[H ⁺]			Cond	0	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺		2.0 + 452[H ⁺]			Cond	5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺		2.9 + 595[H ⁺]			Cond	10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺		4.1 + 732[H ⁺]			Cond	15	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺		5.8 + 971[H ⁺]			Cond	20	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺	6.4x10 ⁶	8.0 + 1240[H ⁺]			Ext	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692
	Ba ²⁺			45.0(d)	-76.8(d)	Cond	25	MeOH (for k)	692
	Ba ²⁺			32.4(d)	-77.2(d)	Cond	25	MeOH (for k_H)	692
	Ba ²⁺	6.3x10 ⁸	7.94	45.0(d)	-76.8(d)	Cond	25	MeOH	413
	Ba ²⁺		1230			Cond	25	MeOH ($k_d = k_H$)	413
	UO ₂ ²⁺	23x158[L]/ (1+158[L])				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 1: formation of UO ₂ L outer sphere complex -> UO ₂ L "external" complex) [L] = (0.1-3)x10 ⁻² M	1134
	UO ₂ ²⁺	1.3+17x9.3[L]/ (1+9.3[L])				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 2: UO ₂ L "external" -> UO ₂ L ₂ "external" + UO ₂ L "external" -> UO ₂ L "exclusive" + UO ₂ L ₂ "biexternal") [L] = (0.1-3)x10 ⁻³ M	1134
	UO ₂ ²⁺	0.283				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 3: UO ₂ L "exclusive" = UO ₂ L "inclusive")	1134
	UO ₂ ²⁺	0.016				Spec	25	PC, 0.1 M Et ₄ NClO ₄ (step 4: UO ₂ L "exclusive" = UO ₂ L "external" = UO ₂ L ₂ "biexternal")	1134
A ₂ 18C6-2	La ³⁺		0.945			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.085x10 ⁻⁶ M	697
	La ³⁺		0.984			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.162x10 ⁻⁶ M	697
	La ³⁺		1.01			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.525x10 ⁻⁶ M	697
	La ³⁺		1.06			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 2.51x10 ⁻⁶ M	697
	La ³⁺		1.19			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 2.95x10 ⁻⁶ M	697
	La ³⁺		1.93			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 6.61x10 ⁻⁶ M	697
	La ³⁺		0.88+ 1.42x10 ⁴ [H ⁺]			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 8.5x10 ⁻⁷ to 8.13x10 ⁻⁵ M ($k_d = k + k_H[H^+]$)	697
	Eu ³⁺		0.216			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.085x10 ⁻⁶ M	697
	Eu ³⁺		0.245			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.162x10 ⁻⁶ M	697
	Eu ³⁺		0.324			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 0.525x10 ⁻⁶ M	697
	Eu ³⁺		0.376			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 2.51x10 ⁻⁶ M	697
	Eu ³⁺		0.443			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 2.95x10 ⁻⁶ M	697
	Eu ³⁺		0.597			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 6.16x10 ⁻⁶ M	697
	Eu ³⁺		0.631			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 8.13x10 ⁻⁶ M	697
	Eu ³⁺		0.25+ 4.93x10 ⁸ [H ⁺]			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), [H ⁺] = 8.5x10 ⁻⁷ to 8.13x10 ⁻⁵ M ($k_d = k + k_H[H^+]$)	697
	Lu ³⁺		3.99			Spec	25	H ₂ O, I = 0.1 (LiClO ₄), pH 6.05	697
	Cu ²⁺	0.83x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 3.75 (buffer)	1118

Table V (Continued)

ligand	cation	$k^f, M^{-1} s^{-1}$	k_d, s^{-1}	ΔH^{*o} kJ/mol	ΔS^{*o} J/K.mol	method ^b	$T, ^\circ C$	conditions ^c	ref	
A ₂ 18C6-4	Cu ²⁺	1.1x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.0 (buffer)	1118	
	Cu ²⁺	1.6x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.25 (buffer)	1118	
	Cu ²⁺	3.1x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.5 (buffer)	1118	
	Cu ²⁺	4.9x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.75 (buffer)	1118	
	Ca ²⁺		4.2 + 1414[H ⁺]			Cond	-10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ca ²⁺		6.01 + 1793[H ⁺]			Cond	-5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ca ²⁺		8.6 + 2241[H ⁺]			Cond	0	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ca ²⁺		11.6 + 2777[H ⁺]			Cond	5	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ca ²⁺	6.1x10 ⁵	38.4 + 6150[H ⁺]			Ext	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ca ²⁺			38.7(d)	-84.9(d)	Cond	25	MeOH (for k)	692	
	Ca ²⁺			24.9(d)	-88.9(d)	Cond	25	MeOH (for k_H)	692	
	Ca ²⁺	3.2x10 ⁶	17.8	35.3(d)	-103(d)	Cond	25	MeOH	413	
	Ca ²⁺		1585			Cond	25	MeOH ($k_d = k_H$)	413	
	Sr ²⁺		0.18+			Cond	10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Sr ²⁺		70[H ⁺]							
	Sr ²⁺		0.28 + 107[H ⁺]			Cond	15	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Sr ²⁺		0.40+			Cond	20	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Sr ²⁺		153[H ⁺]							
	Sr ²⁺	1.8x10 ⁶	0.58 + 223[H ⁺]			Cond	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Sr ²⁺			51.8(d)	-75.5(d)	Cond	25	MeOH (for k)	692	
	Sr ²⁺			51.4(d)	-27.9(d)	Cond	25	MeOH (for k_H)	692	
	Sr ²⁺	6.3x10 ⁵	0.22	58.6(d)	-61.1(d)	Cond	25	MeOH	413	
	Sr ²⁺		7.41			Cond	25	MeOH ($k_d = k_H$)	413	
	Ba ²⁺		0.37+			Cond	10	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ba ²⁺		52[H ⁺]							
	Ba ²⁺		0.58 + 62[H ⁺]			Cond	15	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ba ²⁺		0.90+			Cond	20	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692	
	Ba ²⁺		69[H ⁺]							
Ba ²⁺	1.1x10 ⁷	1.4 + 72[H ⁺]			Cond	25	MeOH, (1.0-10.0)x 10 ⁻³ M CF ₃ SO ₃ H ($k_d = k + k_H[H^+]$)	692		
Ba ²⁺			12.5(d)	-167(d)	Cond	25	MeOH (for k_H)	692		
Ba ²⁺	1x10 ⁷	1.40	59.1(d)	-44.0(d)	Cond	25	MeOH (for k)	413, 692		
Ba ²⁺		72.4			Cond	25	MeOH ($k_d = k_H$)	413		
A ₂ 18C6-17	La ³⁺		1.01x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140	
	La ³⁺		1.59x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140	
	La ³⁺		2.77x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140	
	La ³⁺		3.40x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140	
	La ³⁺		4.93x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140	
	La ³⁺		6.56x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140	
	La ³⁺		9.45x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140	
	La ³⁺		3.97x10 ⁻⁴⁺ 1.21[H ⁺]		50.2(d)	63.2(d)	Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M (ΔH^* for k_H) ($k_d = k + k_H[H^+]$)	1140
	La ³⁺		1.45x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140	
	La ³⁺		2.29x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140	
	La ³⁺		5.83x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140	
	La ³⁺		6.91x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140	

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	La ³⁺		9.60x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	La ³⁺		13.1x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	La ³⁺		20.4x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	La ³⁺		2.83x10 ⁻⁵⁺ 2.64[H ⁺]			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	La ³⁺		3.06x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	La ³⁺		5.27x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	La ³⁺		10.1x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	La ³⁺		13.2x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	La ³⁺		19.9x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	La ³⁺		26.1x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	La ³⁺		38.7x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	La ³⁺		4.42x10 ⁻⁵⁺ 5.07[H ⁺]			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Pr ³⁺		0.36x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Pr ³⁺		0.63x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Pr ³⁺		1.14x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Pr ³⁺		1.40x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Pr ³⁺		2.10x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Pr ³⁺		2.82x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Pr ³⁺		4.12x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Pr ³⁺		9.14x10 ⁻⁵⁺ 5.36x10 ⁻¹ [H ⁺]			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Eu ³⁺		0.68x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Eu ³⁺		1.22x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Eu ³⁺		1.39x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Eu ³⁺		1.83x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Eu ³⁺		2.65x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Eu ³⁺		3.51x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Eu ³⁺		4.51x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Eu ³⁺		4.31x10 ⁻⁴ 5.70x10 ⁻¹ [H ⁺]	27.2(d)	-158(d)	Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M (ΔH^\ddagger for k_H) ($k_d = k + k_H[H^+]$)	1140
	Eu ³⁺		0.96x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Eu ³⁺		1.56x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Eu ³⁺		2.14x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Eu ³⁺		2.94x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Eu ³⁺		3.50x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Eu ³⁺		5.01x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Eu ³⁺		6.65x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Eu ³⁺		5.90x10 ⁻⁴⁺ 8.39x10 ⁻¹ [H ⁺]			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Eu ³⁺		1.64x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Eu ³⁺		2.40x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger,a}$ kJ/mol	$\Delta S^{\ddagger,a}$ J/K.mol	method ^b	T , °C	conditions ^c	ref
	Eu ³⁺		3.36x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄) [H ⁺] = 1.95x10 ⁻³ M	1140
	Eu ³⁺		4.10x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄) [H ⁺] = 2.5x10 ⁻³ M	1140
	Eu ³⁺		5.52x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄) [H ⁺] = 3.75x10 ⁻³ M	1140
	Eu ³⁺		7.25x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄) [H ⁺] = 5.0x10 ⁻³ M	1140
	Eu ³⁺		10.2x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄) [H ⁺] = 7.5x10 ⁻³ M	1140
	Eu ³⁺		1.07x10 ⁻³ + 1.22[H ⁺]			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Yb ³⁺		1.14x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Yb ³⁺		2.02x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Yb ³⁺		3.21x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Yb ³⁺		3.88x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Yb ³⁺		5.82x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Yb ³⁺		7.16x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Yb ³⁺		10.5x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Yb ³⁺		5.02x10 ⁻⁴ + 1.37[H ⁺]			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Lu ³⁺		1.34x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Lu ³⁺		2.34x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Lu ³⁺		3.65x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Lu ³⁺		4.73x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Lu ³⁺		6.79x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Lu ³⁺		8.71x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Lu ³⁺		12.6x10 ⁻³			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Lu ³⁺		5.58x10 ⁻⁴ + 1.64[H ⁺]	32.2(d)	-133(d)	Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M (ΔH^\ddagger for K_H) ($k_d = k + k_H[H^+]$)	1140
	Lu ³⁺		1.57x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Lu ³⁺		2.99x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Lu ³⁺		5.32x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Lu ³⁺		6.84x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Lu ³⁺		9.69x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Lu ³⁺		13.2x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Lu ³⁺		18.8x10 ⁻³			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Lu ³⁺		3.34x10 ⁻⁴ + 2.54[H ⁺]			Spec	35	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻³ M ($k_d = k + k_H[H^+]$)	1140
	Lu ³⁺		1.97x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.5x10 ⁻³ M	1140
	Lu ³⁺		3.70x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.0x10 ⁻³ M	1140
	Lu ³⁺		7.92x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 1.95x10 ⁻³ M	1140
	Lu ³⁺		9.76x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.5x10 ⁻³ M	1140
	Lu ³⁺		15.4x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 3.75x10 ⁻³ M	1140
	Lu ³⁺		19.9x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 5.0x10 ⁻³ M	1140
	Lu ³⁺		29.1x10 ⁻³			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 7.5x10 ⁻³ M	1140
	Lu ³⁺		5.50x10 ⁻⁶ + 3.97[H ⁺]			Spec	45	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = (0.5-7.5)x10 ⁻⁶ M ($k_d = k + k_H[H^+]$)	1140

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Cu ²⁺	0.93x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 3.75 (buffer)	1118
	Cu ²⁺	2.3x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.0 (buffer)	1118
	Cu ²⁺	7.1x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.5 (buffer)	1118
	Cu ²⁺	9.5x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.75 (buffer)	1118
A ₂ 18C6-22	La ³⁺		0.223			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.12x10 ⁻⁶ M	697
	La ³⁺		0.212			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.19x10 ⁻⁶ M	697
	La ³⁺		0.226			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.76x10 ⁻⁶ M	697
	La ³⁺		0.253			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.95x10 ⁻⁶ M	697
	La ³⁺		0.380			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 6.61x10 ⁻⁶ M	697
	La ³⁺		0.206+			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 8.5x10 ⁻⁷ to 8.13x10 ⁻⁶ M	697
	Eu ³⁺		0.011			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.12x10 ⁻⁶ M	697
	Eu ³⁺		0.011			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.19x10 ⁻⁶ M	697
	Eu ³⁺		0.010			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.76x10 ⁻⁶ M	697
	Eu ³⁺		0.012			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 2.95x10 ⁻⁶ M	697
	Eu ³⁺		0.013			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 6.61x10 ⁻⁶ M	697
	Eu ³⁺		0.014			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 8.13x10 ⁻⁶ M	697
	Eu ³⁺		0.011+			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 8.5x10 ⁻⁷ to 8.13x10 ⁻⁶ M	697
	Lu ³⁺		0.619			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.12x10 ⁻⁶ M	697
	Lu ³⁺		0.677			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), [H ⁺] = 0.19x10 ⁻⁶ M	697
	Lu ³⁺		0.612			Spec	25	H ₂ O, $I = 0.1$ (LiClO ₄), pH 6.05	697
A ₂ 18C6-50	Cu ²⁺	0.30x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.0 (buffer)	1118
	Cu ²⁺	0.61x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.25 (buffer)	1118
	Cu ²⁺	1.2x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.5 (buffer)	1118
	Cu ²⁺	2.1x10 ⁴				Spec	25	H ₂ O, 0.1 M NaCl, pH 4.75 (buffer)	1118
				CHART XXXV					
BA ₂ 18C6-1	Ca ²⁺	3.2x10 ⁶	50.1	43.1(d)	-67.8(d)	Cond	25	MeOH	413
	Sr ²⁺	1.3x10 ⁶	15.1	50.2(d)	-53.0(d)	Cond	25	MeOH	413
	Ba ²⁺	4.0x10 ⁶	117	47.4(d)	-46.3(d)	Cond	25	MeOH	413
				CHART XXXVI					
A ₆ 18C6-1	Ni ²⁺		0.227x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 9.6x10 ⁻³ M	1119
	Ni ²⁺		2.14x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 20.3x10 ⁻³ M	1119
	Ni ²⁺		7.54x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 30.9x10 ⁻³ M	1119
	Ni ²⁺		15.60x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 38.7x10 ⁻³ M	1119
	Ni ²⁺		28.46x10 ⁻³			Spec	25	H ₂ O, $I = 0.98$ (NaClO ₄), [H ⁺] = 48.03x10 ⁻³ M	1119
				CHART XXXVII					
T18C6-1	(C ₂ H ₅) ₂ Tl ³⁺	3.3x10 ⁻⁴		50	-140	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
T ₂ 18C6-2	(CH ₃) ₂ Tl ³⁺	nm		nm	nm	NMR	25	MeOH-d ₃ (anion = ClO ₄) 729	
	(C ₂ H ₅) ₂ Tl ³⁺	2.2x10 ⁻⁴		67	-89	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
T ₂ 18C6-3	(CH ₃) ₂ Tl ³⁺	nm		nm	nm	NMR	25	MeOH-d ₃ (anion = ClO ₄) 729	
	(C ₂ H ₅) ₂ Tl ³⁺	1.7x10 ⁻⁴		49	-150	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
T ₃ 18C6-1	(CH ₃) ₂ Tl ³⁺	160		35	-85	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
	(C ₂ H ₅) ₂ Tl ³⁺	1.4x10 ⁻²		nm	nm	NMR	24	MeCN-d ₃ (anion = ClO ₄) 729	
T ₃ 18C6-2	(CH ₃) ₂ Tl ³⁺	11		31	-120	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
	(C ₂ H ₅) ₂ Tl ³⁺	3.2x10 ⁻⁴		45	-160	NMR	25	MeCN-d ₃ (anion = ClO ₄) 729	
Spher-19C2-1	K ⁺	1x10 ⁷	27			NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
Spher-19C2-2	K ⁺	4x10 ⁷	26			NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
				CHART XLII					
B ₂ 20C6-1	Hg ²⁺ ·2CF ₃ ⁻	4.0x10 ⁻⁴	2.6x10 ⁻⁷			NMR	23	CDCl ₃	1130
Py ₂ 20C6-1	Hg ²⁺ ·2CF ₃ ⁻	2x10 ⁻⁶	1x10 ⁻⁷			NMR	23	CDCl ₃	1130

Table V (Continued)

ligand	cation	$k_f^i, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
CHART XLIII									
B ₂ A ₃ 20C6-1	Ni ²⁺		0.5x10 ⁻¹			Spec	8	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Ni ²⁺		1.14x10 ⁻¹			Spec	15	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Ni ²⁺		2.8x10 ⁻¹	68.8(d)	-26.4(d)	Spec	25	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Ni ²⁺		4.51x10 ⁻¹			Spec	30	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Cu ²⁺		0.7x10 ⁻¹			Spec	8	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Cu ²⁺		1.52x10 ⁻¹			Spec	15	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Cu ²⁺		3.82x10 ⁻¹	67.8(d)	27.3(d)	Spec	25	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
	Cu ²⁺		3.33x10 ⁻¹			Spec	30	H ₂ O, 0.1 M NaClO ₄ [HClO ₄] = 0.06 M	748
Spher-A ₅ 20C6-3	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		6.7x10 ⁴		-102.5(d)	NMR	25	Me ₂ CO- <i>d</i> ₆ (anion = picrate)	750
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.9x10 ¹¹	4.2x10 ⁴		-13.0(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
Spher-A ₅ 20C6-5	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		1.1x10 ²		-131.4(d)	NMR	25	Me ₂ CO- <i>d</i> ₆ (anion = picrate)	750
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	1.4x10 ¹²	6.1x10 ²		-72.0(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
Spher-A ₅ 20C6-6	<i>t</i> -C ₄ H ₉ NH ₃ ⁺		42		-134.3(d)	NMR	25	Me ₂ CO- <i>d</i> ₆ (anion = picrate)	750
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.1x10 ¹²	3.9x10 ²		-59.8(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
CHART XLIV									
Spher-B ₂ A ₄ 20C7-2	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	2.9x10 ⁸		-108.8(d)		NMR	25	Me ₂ CO- <i>d</i> ₆ (anion = picrate)	750
	<i>t</i> -C ₄ H ₉ NH ₃ ⁺	3.3x10 ¹⁰	2.2x10 ⁸		-23.8(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	750
Spher-21C3-2	K ⁺	2x10 ⁸	4			NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	496
CHART XLV									
(Nap) ₂ 21C5-1	K ⁺		3			NMR	-63	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		1x10			NMR	-53	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		2.5x10			NMR	-43	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		6.0x10			NMR	-33	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		1.2x10 ²			NMR	-23	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		2.3x10 ²			NMR	-13	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		4.2x10 ²			NMR	-3	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		7.4x10 ²			NMR	7	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		1.3x10 ³			NMR	17	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		2.0x10 ⁶			NMR	27	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 1)	1124
	K ⁺		1.4x10 ⁸			NMR	-63	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		3.0x10 ⁸			NMR	-53	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		6.2x10 ⁸			NMR	-43	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		1.2x10 ⁴			NMR	-33	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		2.2x10 ⁴			NMR	-23	Py/CH ₂ Cl ₂ /MeOH- <i>d</i> ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124

Table V (Continued)

ligand	cation	k^f , M ⁻¹ s ⁻¹	$k_{d,s}^{-1}$	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K.mol	method ^b	T, °C	conditions ^c	ref
	K ⁺		3.7x10 ⁴			NMR	-13	Py/CH ₂ Cl ₂ /MeOH-d ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		6.2x10 ⁴			NMR	-3	Py/CH ₂ Cl ₂ /MeOH-d ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		1.0x10 ⁵			NMR	7	Py/CH ₂ Cl ₂ /MeOH-d ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		1.5x10 ⁵			NMR	17	Py/CH ₂ Cl ₂ /MeOH-d ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
	K ⁺		2.4x10 ⁵			NMR	27	Py/CH ₂ Cl ₂ /MeOH-d ₃ (45:45:10), anion = SCN ⁻ (mechanism 3)	1124
(Nap) ₂ 21C5-2	Na ⁺		3006			NMR	-35	Py·CH ₂ Cl ₂ (1:1), (anion = BPh ₄ ⁻)	1125
CHART XLVI									
21C7-1	Hg ²⁺ , 2CF ₃ ⁻		5.5x10 ⁻⁴			NMR	23	Me ₂ CO-d ₆ /C ₆ D ₆ (1:1/v:v)	1130
B ₂ 21C7-1	Cs ⁺		9.4x10 ³	33.9(d)	-11.3(d)	NMR	-53	Me ₂ CO (anion = SCN ⁻) (mechanism 2)	1141
	Cs ⁺		2.7x10 ⁴	25.1(d)	-43.9(d)	NMR	-53	MeOH (anion = SCN ⁻) (mechanism 2)	1141
CHART XLVII									
A ₂ 21C7-1	Ba ²⁺	4x10 ⁷	158			Cond	25	MeOH	413
CHART LI									
B ₂ 24C8-1	Na ⁺			31	-32	NMR	27	NMe (anion = BPh ₄ ⁻) (mechanism 2)	1142
	Na ⁺		60			NMR	27	NMe (anion = PF ₆ ⁻) (mechanism 1)	654
	Na ⁺			30	-37	NMR	-15 to 60	NMe (anion = PF ₆ ⁻) (mechanism 2)	654
	Na ⁺		2.8x10 ⁻⁵			NMR	21	NMe (anion = BPh ₄ ⁻) (mechanism 2)	790
	Na ⁺		3.5x10 ⁻⁵			NMR	21	NMe (anion = PF ₆ ⁻) (mechanism 2)	790
	Na ⁺		4.5x10 ⁻⁵			NMR	21	NMe (anion = I ⁻) (mechanism 2)	790
	Na ⁺		1.3x10 ⁻⁴			NMR	21	NMe (anion = SCN ⁻) (mechanism 2)	790
	Cs ⁺		7.4x10 ⁴	28.0(d)	-20.9(d)	NMR	-53	Me ₂ CO (anion = SCN ⁻) (mechanism 2)	1141
	Cs ⁺		5.6x10 ⁴	12.1(d)	-97.1(d)	NMR	-53	MeOH (anion = SCN ⁻) (mechanism 2)	1141
CHART LIV									
B27C9-1	guanidinium		135.6			NMR	245	CDCl ₃ (anion = ClO ₄ ⁻)	1143
	guanidinium		88.1			NMR	240	CDCl ₃ (anion = ClO ₄ ⁻)	1143
B ₂ 27C9-1	guanidinium		142.1			NMR	233	CDCl ₃ (anion = ClO ₄ ⁻)	1143
	guanidinium		69.4			NMR	227	CDCl ₃ (anion = ClO ₄ ⁻) (cation = Na ⁺)	1143
CHART LVIII									
B ₂ 30C10-1	guanidinium		27.8			NMR	240	CDCl ₃ (anion = ClO ₄ ⁻)	1143
B ₂ 30C10-3	Cs ⁺		4.2x10 ⁷	34.3(d)	25.9(d)	NMR	-20	MeCN (mechanism 2)	1144
	Cs ⁺		7.6x10 ⁶	37.7(d)	36.4(d)	NMR	-20	MeOH (mechanism 2)	1144
	Cs ⁺		1.7x10 ⁶	13.8(d)	-90.0(d)	NMR	-20	NMe (mechanism 1)	1144
	Cs ⁺		5.4x10 ⁶	46.4(d)	69.0(d)	NMR	-20	PC (mechanism 2)	1144
CHART LXIII									
(AT ₂ 12C4) ₂ -1	Cu ²⁺		0.14 (Cu ₂ L)			Spec	25	H ₂ O, [H ⁺] = 2.5·4x10 ⁻³ M	182
	Cu ²⁺		9.2;8.8 [Cu ₂ (μ-OH)L]			Spec	25	H ₂ O, [H ⁺] = 2.5x10 ⁻³ M	182
	Cu ²⁺		15.6;14.9 [Cu ₂ (μ-OH)L]			Spec	25	H ₂ O, [H ⁺] = 5x10 ⁻³ M	182
	Cu ²⁺		27.6;29.1 [Cu ₂ (μ-OH)L]			Spec	25	H ₂ O, [H ⁺] = 10 ⁻³ M	182
	Cu ²⁺		72.3;69.8 [Cu ₂ (μ-OH)L]			Spec	25	H ₂ O, [H ⁺] = 2.5x10 ⁻² M	182
	Cu ²⁺		106;112 [Cu ₂ (μ-OH)L]			Spec	25	H ₂ O, [H ⁺] = 4x10 ⁻² M	182
CHART LXIV									
(B15C5) ₂ -12	K ⁺	3.7x10 ⁵	25			TJ	25	MeOH (anion = Br ⁻)	1145
	Rb ⁺	5.8x10 ⁵	9			TJ	25	MeOH (anion = Br ⁻)	1145
(B15C5) ₂ -14	K ⁺	5.4x10 ⁵	12			TJ	25	MeOH (anion = Br ⁻)	1145
	Rb ⁺	5.4x10 ⁵	15			TJ	25	MeOH (anion = Br ⁻)	1145
(B15C5) ₂ -15	K ⁺	1.2x10 ⁵	10			TJ	25	MeOH (anion = Br ⁻)	1145
CHART LXVIII									
Cat[Phen(1,4-B) ₂ 30C8] ₂ -1	H ⁺		1.47x10 ⁵			Spec	25	MeCN·CH ₂ Cl ₂ -H ₂ O (8:1:1/v:v:v), 0.1 M Bu ₄ NClO ₄ (step 1: HL ⁺ + OH ⁻ → intermediate)	1021

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/K·mol	method ^b	T, °C	conditions ^c	ref
	H ⁺		0.27			Spec	25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.1 M Bu ₄ NClO ₄ (step 2: intermediate → L + H ₂ O)	1021
	Cu ⁺		1.8x10 ⁻⁴			Spec	25	MeCH ₂ ·H ₂ O (9:1/w:w), 0.1 M Bu ₄ NClO ₄ , direct	1019
	Cu ⁺		0.16			Spec	25	MeCH ₂ ·H ₂ O (9:1/w:w), 0.1 M Bu ₄ NClO ₄ , CN ⁻ ·assisted	1019
	Cu ⁺		1.8x10 ⁻⁴ + 0.16[CN ⁻]			Spec	25	MeCN·H ₂ O (9:1/w:w), 0.1 M Bu ₄ NClO ₄ ($k_d = k + k_{CN}[CN^-]$), CN ⁻ ·assisted	1019
Cat[Phen(1,4-B) ₂ 30C8] ₂ -2	H ⁺		1.16			Spec	25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.1 M Bu ₄ NClO ₄ , (HL ⁺ + OH ⁻ → + H ₂ O)	1021Z
	Cu ⁺		<10 ⁻⁶			Spec	25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.1 M Bu ₄ NClO ₄ , direct	1021
	Cu ⁺		<5x10 ⁻⁵			Spec	25	MeCN·CH ₂ Cl ₂ ·H ₂ O (8:1:1/v:v:v), 0.1 M Bu ₄ NClO ₄ , CN ⁻ · assisted	1021
CHART LXX									
[2.1.C ₅]-1	Li ⁺	12.4x10 ³	227	49.0(d)	-35.0(d)	NMR	25	DMAC (mechanism 1)	861
	Li ⁺	14.9x10 ³	210	27.8(d)	-108(d)	NMR	25	DEF (mechanism 1)	861
	Li ⁺	7.3x10 ³	116	38.4(d)	-76.5(d)	NMR	25	DMF (mechanism 1)	861
	Li ⁺	6.7x10 ⁴	107			NMR	25	DMF	862, 863
	Li ⁺		slow			NMR	25	MeCN (mechanism 1)	861
	Li ⁺		slow			NMR	25	Me ₂ CO (mechanism 1)	861
	Li ⁺	22.1x10 ³	21.6	36.1(d)	98.4(d)	NMR	25	MeOH (mechanism 1)	861
	Li ⁺		slow			NMR	25	PC (mechanism 1)	861
	Na ⁺	fast	fast			NMR	25	DEF	407
	Na ⁺	fast	fast			NMR	25	DMAC	407
	Na ⁺	21.4x10 ⁶	2.88x10 ⁴	40.0(d)	25.3(d)	NMR	25	DMF (anion = ClO ₄ ⁻)	862, 1146
	Na ⁺	10.0x10 ⁶	84.8	57.9(d)	-13.8(d)	NMR	25	MeCN (anion = ClO ₄ ⁻)	862, 1147
	Na ⁺	8.4x10 ⁶	878	54.4(d)	-6.1(d)	NMR	25	Me ₂ CO (anion = ClO ₄ ⁻)	862, 1147
	Na ⁺	10.4x10 ⁶	1800	44.9(d)	-31.9(d)	NMR	25	MeOH (anion = ClO ₄ ⁻)	862, 1147
	Na ⁺		large			NMR	25	Me ₂ SO	1147
	Na ⁺	2.55x10 ⁸	19.4	70.3(d)	15.3(d)	NMR	25	PC (anion = ClO ₄ ⁻)	862, 1147
	Na ⁺	0.49x10 ⁸	93.5	62.8(d)	3.3(d)	NMR	25	Py (anion = ClO ₄ ⁻)	862, 1147
[2.1.1]-1	Li ⁺		3.00x10 ⁻²			Cond	25	D ₂ O, 0.46x10 ⁻³ M DCl	1148
	Li ⁺		3.50x10 ⁻²			Cond	25	D ₂ O, 0.80x10 ⁻³ M DCl	1148
	Li ⁺		3.94x10 ⁻²			Cond	25	D ₂ O, 1.09x10 ⁻³ M DCl	1148
	Li ⁺		5.08x10 ⁻²			Cond	25	D ₂ O, 1.60x10 ⁻³ M DCl	1148
	Li ⁺		5.89x10 ⁻²			Cond	25	D ₂ O, 2.45x10 ⁻³ M DCl	1148
	Li ⁺		3.64x10 ⁻²			Cond	25	H ₂ O, 0.45x10 ⁻³ M HCl	1148
	Li ⁺		4.58x10 ⁻²			Cond	25	H ₂ O, 0.75x10 ⁻³ M HCl	1148
	Li ⁺		5.24x10 ⁻²			Cond	25	H ₂ O, 1.10x10 ⁻³ M HCl	1148
	Li ⁺		6.30x10 ⁻²			Cond	25	H ₂ O, 1.50x10 ⁻³ M HCl	1148
	Li ⁺		8.26x10 ⁻²			Cond	25	H ₂ O, 2.40x10 ⁻³ M HCl	1148
	Li ⁺		8.90x10 ⁻²			Cond	25	H ₂ O, I = 0.13 (Et ₄ NBr)	
	Li ⁺		12.7x10 ⁻²			Cond	25	0.76x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.13 (Et ₄ NBr)	1148
	Li ⁺		15.8x10 ⁻²			Cond	25	1.55x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.13 (Et ₄ NBr)	1148
	Li ⁺		18.3x10 ⁻²			Cond	25	2.38x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.13 (Et ₄ NBr)	1148
	Li ⁺		20.8x10 ⁻²			Cond	25	3.20x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.13 (Et ₄ NBr)	1148
	Li ⁺		6.98x10 ⁻²			Cond	25	4.03x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		10.1x10 ⁻²			Cond	25	0.76x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		11.9x10 ⁻²			Cond	25	1.57x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		14.2x10 ⁻²			Cond	25	2.38x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		15.9x10 ⁻²			Cond	25	3.20x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		17.9x10 ⁻²			Cond	25	4.01x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.05 (Et ₄ NBr)	1148
	Li ⁺		4.68x10 ⁻²			Cond	25	4.82x10 ⁻² M CH ₂ ClCO ₂ H H ₂ O, I = 0.06 (Et ₄ NBr)	1148
	Li ⁺		5.37x10 ⁻²			Cond	25	1.01x10 ⁻² M HCO ₂ H H ₂ O, I = 0.06 (Et ₄ NBr)	1148
	Li ⁺		5.99x10 ⁻²			Cond	25	1.55x10 ⁻² M HCO ₂ H H ₂ O, I = 0.06 (Et ₄ NBr)	1148
	Li ⁺		6.40x10 ⁻²			Cond	25	2.10x10 ⁻² M HCO ₂ H H ₂ O, I = 0.06 (Et ₄ NBr)	1148
	Li ⁺		7.20x10 ⁻²			Cond	25	2.64x10 ⁻² M HCO ₂ H H ₂ O, I = 0.06 (Et ₄ NBr)	1148
	Li ⁺					Cond	25	3.19x10 ⁻² M HCO ₂ H	1148

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	ΔH^{*o} kJ/mol	ΔS^{*o} J/Kmol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Li ⁺		7.98x10 ⁻²			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr)	
	Li ⁺		8.82x10 ⁻²			Cond	25	4.27x10 ⁻² M HCO ₂ H H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		4.68x10 ⁻²			Cond	25	5.36x10 ⁻² M HCO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		5.71x10 ⁻²			Cond	25	1.53x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		6.62x10 ⁻²			Cond	25	3.06x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		7.26x10 ⁻²			Cond	25	4.64x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		7.84x10 ⁻²			Cond	25	6.21x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		8.40x10 ⁻²			Cond	25	7.81x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.05$ (Et ₄ NBr)	1148
	Li ⁺		3.43x10 ⁻²			Cond	25	9.36x10 ⁻² M CH ₂ ClCH ₂ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		3.80x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 1.06x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		4.09x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 2.12x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		4.31x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 3.18x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		5.14x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 4.24x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		5.60x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 8.49x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		6.48x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 12.8x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		3.70x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=4.4 21.3x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		4.44x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 2.11x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		4.98x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 4.21x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		5.47x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 6.32x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		5.92x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 8.42x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		6.39x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 10.5x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		6.94x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 13.6x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		6.41x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=8.8 18.1x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		7.52x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=20.5 9.25x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		8.70x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=20.5 14.0x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		9.61x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=20.5 18.5x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.03$ (Et ₄ NBr)	1148
	Li ⁺		5.15x10 ⁻²			Cond	25	[CH ₃ CO ₂ H]/[CH ₃ CO ₂]=20.5 23.2x10 ⁻² M CH ₃ CO ₂ H H ₂ O, $I = 0.133$ (Et ₄ NBr)	1148
	Li ⁺		6.76x10 ⁻²			Cond	25	0.74x10 ⁻² M HO ₂ CCO ₂ ⁻ H ₂ O, $I = 0.133$ (Et ₄ NBr)	1148
	Li ⁺		8.88x10 ⁻²			Cond	25	1.54x10 ⁻² M HO ₂ CCO ₂ ⁻ H ₂ O, $I = 0.133$ (Et ₄ NBr)	1148
	Li ⁺		10.1x10 ⁻²			Cond	25	2.34x10 ⁻² M HO ₂ CCO ₂ ⁻ H ₂ O, $I = 0.133$ (Et ₄ NBr)	1148
	Li ⁺					Cond	25	3.15x10 ⁻² M HO ₂ CCO ₂ ⁻	1148

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \rho}$ kJ/mol	$\Delta S^{\ddagger, \rho}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Li ⁺		11.9x10 ⁻²			Cond	25	H ₂ O, $I = 0.133$ (Et ₄ NBr)	
	Li ⁺		12.9x10 ⁻²			Cond	25	3.96x10 ⁻² M HO ₂ CCO ₂ ⁻ H ₂ O, $I = 0.133$ (Et ₄ NBr)	1148
	Li ⁺		2.67x10 ⁻²			Cond	25	4.77x10 ⁻² M HO ₂ CCO ₂ ⁻ H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		2.80x10 ⁻²			Cond	25	1.13x10 ⁻² M C ₆ H ₅ NH ₃ ⁺ H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		2.76x10 ⁻²			Cond	25	2.28x10 ⁻² M C ₆ H ₅ NH ₃ ⁺ H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		2.89x10 ⁻²			Cond	25	3.41x10 ⁻² M C ₆ H ₅ NH ₃ ⁺ H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		2.87x10 ⁻²			Cond	25	4.57x10 ⁻² M C ₆ H ₅ NH ₃ ⁺ H ₂ O, $I = 0.06$ (Et ₄ NBr)	1148
	Li ⁺		0.109			Cond	25	5.70x10 ⁻² M C ₆ H ₅ NH ₃ ⁺ H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.098			Cond	25	0.2 M CH ₃ CO ₂ H 0.010 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.087			Cond	25	0.2 M CH ₃ CO ₂ H 0.015 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.072			Cond	25	0.2 M CH ₃ CO ₂ H 0.025 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.060			Cond	25	0.2 M CH ₃ CO ₂ H 0.045 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.056			Cond	25	0.2 M CH ₃ CO ₂ H 0.065 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.050			Cond	25	0.2 M CH ₃ CO ₂ H 0.085 M NaOAc H ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.088			Cond	25	0.2 M CH ₃ CO ₂ H 0.105 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.083			Cond	25	0.2 M CH ₃ CO ₂ D 0.015 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.069			Cond	25	0.2 M CH ₃ CO ₂ D 0.025 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.059			Cond	25	0.2 M CH ₃ CO ₂ D 0.045 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.054			Cond	25	0.2 M CH ₃ CO ₂ D 0.065 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		0.048			Cond	25	0.2 M CH ₃ CO ₂ D 0.085 M NaOAc D ₂ O, $I = 0.113$ (NaNO ₃)	1148
	Li ⁺		5.25			Cond	25	0.105 M NaOAc H ₂ O, $I = 0.03-0.06$ (CH ₂ ClCO ₂ H-catalyzed)	1149
	Li ⁺		2.90			Cond	25	H ₂ O, $I = 0.03-0.06$ (CH ₂ ICO ₂ H-catalyzed)	1149
	Li ⁺		1.27			Cond	25	H ₂ O, $I = 0.03-0.06$ (HCO ₂ H-catalyzed)	1149
	Li ⁺		0.86			Cond	25	H ₂ O, $I = 0.03-0.06$ (CH ₂ ClCH ₂ CO ₂ H-catalyzed)	1149
	Li ⁺		3.76			Cond	25	H ₂ O, $I > 0$ (HO ₂ CCO ₂ ⁻ -catalyzed)	1149
	Li ⁺		0.04			Cond	25	H ₂ O, $I > 0$ (C ₂ H ₅ NH ₃ ⁺ -catalyzed)	1149
	Li ⁺		0.31			Cond	25	H ₂ O, $I = 0.03-0.06$ (CH ₃ CO ₂ H-catalyzed)	1149
	Na ⁺	7.54x10 ⁴	47.6	67.2(d)	12.6(d)	NMR	25	H ₂ O, pH 10.5	1150
	Na ⁺		1053.6			NMR	62	H ₂ O, pH 10.5	1150
	Na ⁺		1058.3	67.3(d)	12.9(d)	NMR	62	H ₂ O, pH 11.8	1150
	Na ⁺	2.29x10 ⁶	18.2	67.1(d)	4.4(d)	NMR	25	DEF	407
	Na ⁺	2.49x10 ⁶	45.2	64.8(d)	4.3(d)	NMR	25	DMAC	407
	Na ⁺	1.92x10 ⁶	12.1	83.5(d)	55.9(d)	NMR	25	DMF	1150
	Na ⁺		554.8			NMR	62	DMF	1150
	Na ⁺		1.39			Cond	-7.06	MeOH·H ₂ O (25:75)	1151
	Na ⁺		2.30			Cond	-2.90	MeOH·H ₂ O (25:75)	1151
	Na ⁺		4.61			Cond	3.20	MeOH·H ₂ O (25:75)	1151
	Na ⁺		9.45			Cond	9.93	MeOH·H ₂ O (25:75)	1151
	Na ⁺		16.9			Cond	15.57	MeOH·H ₂ O (25:75)	1151
	Na ⁺		24.6			Cond	20.32	MeOH·H ₂ O (25:75)	1151
	Na ⁺		38.4			Cond	25.00	MeOH·H ₂ O (25:75)	1151
	Na ⁺		61.7			Cond	29.77	MeOH·H ₂ O (25:75)	1151
	Na ⁺		90.1			Cond	36.14	MeOH·H ₂ O (25:75)	1151
	Na ⁺		143			Cond	41.84	MeOH·H ₂ O (25:75)	1151
	Na ⁺		37.6	63.8(d)	-0.9(d)	Cond	25	MeOH·H ₂ O (25:75)	1151

Table V (Continued)

ligand	cation	k_f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	T_f , °C	conditions ^c	ref
	Na ⁺		36.4	66.0(d)	6.5(d)	NMR	25	MeOH·H ₂ O (25:75)	1151
	Na ⁺	1.45x10 ⁸	34.0	69.5(d)	17.4(d)	NMR	25	Me ₂ SO	1150
	Na ⁺		832.7			NMR	62	Me ₂ SO	1150
	Ca ²⁺		0.82	50.4(d)	-77.5(d)	Cond	25	H ₂ O (CH ₃ CO ₂ H as scavenger)	866
	Ca ²⁺		0.82	52.1(d)	-72.1(d)	Cond	25	H ₂ O (CF ₃ SO ₃ H as scavenger)	866
	Ca ²⁺		0.82			Cond	25	H ₂ O (CF ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.84			Cond	25	H ₂ O (CH ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.82			Cond	25	H ₂ O (HClO ₄ -catalyzed)	866
	Ca ²⁺		0.84			Cond	25	H ₂ O (HCl-catalyzed)	866
	Ca ²⁺		0.826			Cond	25	H ₂ O (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺	1.05x10 ⁸	8.0x10 ⁻¹			Cond	25	DMF	867
	Ca ²⁺		0.68	56.3(d)	-59.4(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2) (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.68	55.9(d)	-60.4(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2) (CF ₃ SO ₃ H as scavenger)	866
	Ca ²⁺		0.57	53.2(d)	-71.1(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.4) (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.67	52.3(d)	-73.2(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.4) (CF ₃ SO ₃ H as scavenger)	866
	Ca ²⁺		0.35	49.0(d)	-88.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.55	50.2(d)	-81.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (CF ₃ SO ₃ H as scavenger)	866
	Ca ²⁺		0.187	44.9(d)	-108(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7) (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.0617	41.5(d)	-129(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.119	38.9(d)	-132(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (CH ₃ SO ₃ H as scavenger)	866
	Ca ²⁺		0.219	45.5(d)	-105(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (HClO ₄ as scavenger)	866
	Ca ²⁺		0.0257	36.9(d)	-152(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.85), (CHCl ₂ CO ₂ H as scavenger)	866
	Ca ²⁺		0.685			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2) (CF ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.676			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2) (CH ₂ ClCO ₂ H-catalyzed)	866
	Ca ²⁺		0.667			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.4) (CF ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.574			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.4) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺		0.546			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (CF ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.355			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺		0.524			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (CH ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.546			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6) (HClO ₄ -catalyzed)	866
	Ca ²⁺		0.395			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7) (CF ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.187			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺		0.119			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (CH ₃ SO ₃ H-catalyzed)	866
	Ca ²⁺		0.217			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (HClO ₄ -catalyzed)	866
	Ca ²⁺		0.0618			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺		0.0261			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.85) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺		6.10x10 ⁻³			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.9) (CHCl ₂ CO ₂ H-catalyzed)	866
	Ca ²⁺	2.2x10 ⁴	4.9x10 ⁻⁵			Cond	25	PC	867
	Ag ⁺	9.55x10 ⁸	0.029	70.4(d)	-37.9(d)	Cond	25	H ₂ O	869
	Ag ⁺	2.45x10 ⁸	0.227	62.1(d)	-55.7(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.1)	869
	Ag ⁺	5.13x10 ⁸	0.414	63.2(d)	-39.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2)	869
	Ag ⁺	7.08x10 ⁸	0.520			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.3)	869
	Ag ⁺	6.46x10 ⁸	0.607	63.5(d)	-35.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.4)	869
	Ag ⁺	7.76x10 ⁸	0.641			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.5)	869
	Ag ⁺	10.23x10 ⁸	0.689	64.6(d)	-30.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.6)	869
	Ag ⁺	11.48x10 ⁸	0.695			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7)	869
	Ag ⁺	15.14x10 ⁸	0.701	64.0(d)	-32.9(d)	Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.8)	869
	Ag ⁺	17.38x10 ⁸	0.690			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.84)	869

Table V (Continued)

ligand	cation	$k_f, \text{M}^{-1} \text{s}^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, \circ}$ kJ/mol	$\Delta S^{\ddagger, \circ}$ J/Kmol	method ^b	$T, ^\circ\text{C}$	conditions ^c	ref
	Ag ⁺	25.12x10 ⁸	0.661			Cond	25	MeCN·H ₂ O ($X_{\text{MeCN}} = 0.9$)	869
	Ag ⁺	28.84x10 ⁸	0.646			Cond	25	MeCN·H ₂ O ($X_{\text{MeCN}} = 0.95$)	869
	Ag ⁺	26.92x10 ⁸	0.479	64.8(d)	-34.9(d)	Cond	25	MeCN (anion = NO ₃ ⁻)	869
	Ag ⁺	22.39x10 ⁸	0.398			Cond	25	MeCN (anion = ClO ₄ ⁻)	869
	Ag ⁺	5.2x10 ⁶	0.36			Cond	25	Me ₂ SO	870
	Tl ⁺	<5.3x10 ²	<4x10 ⁻³			Cond	25	EtOH	873
	Tl ⁺	6.05x10 ⁷	15.9			Cond	25	PC	873
	Pb ²⁺	1.7x10 ⁶				Spec	-10	MeOH	875
	Pb ²⁺	2.2x10 ⁶				Spec	-5	MeOH	875
	Pb ²⁺	3.2x10 ⁶				Spec	0	MeOH	875
	Pb ²⁺	4.8x10 ⁶				Spec	7	MeOH	875
	Pb ²⁺	6.2x10 ⁶				Spec	16.8	MeOH	875
	Pb ²⁺	9.2x10 ⁶		29	-31	Ext	25	MeOH	875
	Pb ²⁺	2.4x10 ⁸	0.50			Cond	25	Me ₂ SO	870
A ₂ [2.1.1]-1	Cu ²⁺	4.74				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 0.8x10 ⁻⁴ M	1104
	Cu ²⁺	5.48				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 1.0x10 ⁻⁴ M	1104
	Cu ²⁺	8.08				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 1.5x10 ⁻⁴ M	1104
	Cu ²⁺	10.2				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 2x10 ⁻⁴ M	1104
	Cu ²⁺	11.1				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 3x10 ⁻⁴ M	1104
	Cu ²⁺	17.8				Spec	25	H ₂ O, 0.075 M Et ₄ NOH [L] = 4x10 ⁻⁴ M	1104
	Cu ²⁺	3.98				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 0.8x10 ⁻⁴ M	1104
	Cu ²⁺	4.01				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 1.0x10 ⁻⁴ M	1104
	Cu ²⁺	5.42				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 1.5x10 ⁻⁴ M	1104
	Cu ²⁺	7.09				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 2x10 ⁻⁴ M	1104
	Cu ²⁺	8.73				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 3x10 ⁻⁴ M	1104
	Cu ²⁺	13.65				Spec	25	H ₂ O, 0.1 M Et ₄ NOH [L] = 4x10 ⁻⁴ M	1104
	Cu ²⁺	2.27				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 0.8x10 ⁻⁴ M	1104
	Cu ²⁺	2.88				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 1.0x10 ⁻⁴ M	1104
	Cu ²⁺	4.07				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 1.5x10 ⁻⁴ M	1104
	Cu ²⁺	4.79				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 2x10 ⁻⁴ M	1104
	Cu ²⁺	7.06				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 3x10 ⁻⁴ M	1104
	Cu ²⁺	9.46				Spec	25	H ₂ O, 0.15 M Et ₄ NOH [L] = 4x10 ⁻⁴ M	1104
	Cu ²⁺	1.79				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 0.8x10 ⁻⁴ M	1104
	Cu ²⁺	2.03				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 1.0x10 ⁻⁴ M	1104
	Cu ²⁺	3.04				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 1.5x10 ⁻⁴ M	1104
	Cu ²⁺	4.07				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 2x10 ⁻⁴ M	1104
	Cu ²⁺	6.05				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 3x10 ⁻⁴ M	1104
	Cu ²⁺	8.56				Spec	25	H ₂ O, 0.2 M Et ₄ NOH [L] = 4x10 ⁻⁴ M	1104
	Cu ²⁺	0.246				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 0.8x10 ⁻⁴ M	1104
	Cu ²⁺	0.300				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 1.0x10 ⁻⁴ M	1104
	Cu ²⁺	0.323				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 1.5x10 ⁻⁴ M	1104
	Cu ²⁺	0.360				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 2x10 ⁻⁴ M	1104
	Cu ²⁺	0.536				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 3x10 ⁻⁴ M	1104
	Cu ²⁺	0.632				Spec	25	H ₂ O, 0.4 M Et ₄ NOH [L] = 4x10 ⁻⁴ M	1104
	Cu ²⁺		1.07			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 1.10	1104
	Cu ²⁺		1.80			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 1.00	1104
	Cu ²⁺		2.34			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 0.92	1104
	Cu ²⁺		4.02			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 0.82	1104
	Cu ²⁺		8.86			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 0.70	1104
	Cu ²⁺		18.36			Spec	25	H ₂ O, I = 0.5 (NaOH, NaClO ₄), pOH 0.60	1104

Table V (Continued)

ligand	cation	k_f , M ⁻¹ s ⁻¹	k_d , s ⁻¹	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K mol	method ^b	T , °C	conditions ^c	ref
[2.2.1]-1	Li ⁺		680	28.7(d)	-101(d)	NMR	25	MeCN (mechanism 2)	1152
	Li ⁺		892	26.2(d)	-109(d)	NMR	25	PC (mechanism 2)	1152
	Na ⁺		3.37x10 ⁻¹	73.0	-9.0	Cond	25	DMF at pressures up to 200 MPa ($k_d = k$)	1153
	Na ⁺		1.53	30.0	-140	Cond	25	DMF at pressures up to 200 MPa ($k_d = k_H$)	1153
	Na ⁺		3.37x10 ⁻¹ + 1.53[H ⁺]			Cond	25	DMF, at pressures up to 200 MPa, [CHCl ₂ CO ₂ H] = (0.6-7.5)x10 ⁻² M ($k_d = k + k_H[H^+]$)	1153
	Na ⁺		73.5[H ⁺]	41.1	-71	Cond	25	MeCN at pressures up to 200 MPa [CHCl ₂ CO ₂ H] = (0.3-7.5)x10 ⁻² M	1153
	Na ⁺		7.65x10 ⁻¹	70.4	-11.0	Cond	25	Me ₂ SO, at pressures up to 200 MPa ($k_d = k$)	1153
	Cs ⁺		4.49x10 ⁴	21.8(d)	-83.3(d)	NMR	25	DMF (mechanism 1)	1139
	Cs ⁺		2.17x10 ³	31.4(d)	-74.9(d)	NMR	25	MeCN (mechanism 1)	1139
	Cs ⁺		3.29x10 ³	24.7(d)	-92.9(d)	NMR	25	MeOH (mechanism 1)	1139
	Ca ²⁺	1.3x10 ³	8.3x10 ⁻⁴			Pot	25	DMF (Cond for k_f)	867
	Ca ²⁺	2.0x10	1.9x10 ⁻³			Pot/Cond	25	Me ₂ SO (Cond for k_f)	867
	Ca ²⁺	1.1x10 ⁵	3.4x10 ⁻⁷			Cond	25	PC	867
	Sr ²⁺	1.4x10 ⁴	3.5x10 ⁻⁴			Pot	25	DMF (Cond for k_f)	867
	Sr ²⁺	5.3x10 ²	4.2x10 ⁻⁴			Pot/Cond	25	Me ₂ SO (Cond for k_f)	867
	Ba ²⁺	1.8x10 ²	1.4x10 ⁻²			Pot	25	DMF (Cond for k_f)	867
	Ba ²⁺	7.6x10 ²	5.4x10 ⁻²			Pot	25	Me ₂ SO (Cond for k_f)	867
	La ³⁺		1.518x10 ⁻⁵	73(d)	-93(d)	NMR	25.4	D ₂ O, $I = 1.0$ (NaCl + 0.202 M DCl), pH < 9.4	1154
	La ³⁺		5.03x10 ⁻⁵			NMR	36.6	D ₂ O, $I = 1.0$ (NaCl + 0.202 M DCl), pH < 9.4	1154
	La ³⁺		1.076x10 ⁻⁴			NMR	44.9	D ₂ O, $I = 1.0$ (NaCl + 0.202 M DCl), pH < 9.4	1154
	La ³⁺		2.117x10 ⁻⁴			NMR	54	D ₂ O, $I = 1.0$ (NaCl + 0.202 M DCl), pH < 9.4	1154
	La ³⁺		1.7x10 ⁻⁵ + 1.05x10 ⁻² [OH ⁻]			NMR	25	D ₂ O, $I = 1.0$ (NaCl + 0.202 M DCl), pH < 9.4	1154
	Ag ⁺	1.7x10 ⁹	2.15x10 ⁻³ + 1.65[H ⁺]			Cond	25	H ₂ O, 2x10 ⁻³ -1.5x10 ⁻² M HClO ₄ ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	1.3x10 ⁸	3.74x10 ⁻³ + 5.20[H ⁺]			Cond	25	MeCN-H ₂ O ($X_{MeCN} = 0.1$), 2x10 ⁻³ -1.5x10 ⁻² M HClO ₄ ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	8.9x10 ⁷	4.67x10 ⁻³ + 5.41[H ⁺]			Cond	25	MeCN-H ₂ O ($X_{MeCN} = 0.3$), 2x10 ⁻³ -1.5x10 ⁻² M HClO ₄ ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	8.1x10 ⁷	4.06x10 ⁻³ + 4.86[H ⁺]			Cond	25	MeCN-H ₂ O ($X_{MeCN} = 0.5$), 2x10 ⁻³ -1.5x10 ⁻² M HClO ₄ ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	1.9x10 ⁶	5.48x10 ⁻³ + 1.21[H ⁺]			Cond	25	MeCN-H ₂ O ($X_{MeCN} = 0.7$), 2x10 ⁻³ -1.5x10 ⁻² M HClO ₄ ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	3.5x10 ⁶	3.87x10 ⁻³ + 0.84[H ⁺]			Cond	25	MeCN-H ₂ O ($X_{MeCN} = 0.9$), 2x10 ⁻³ -1.5x10 ⁻² M CHCl ₂ CO ₂ H ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	1.3x10 ⁶	6.7x10 ⁻³ + 1.17[H ⁺]			Cond	25	MeCN 2x10 ⁻³ -1.5x10 ⁻² M CHCl ₂ CO ₂ H ($k_d = k + k_H[H^+]$)	417
	Ag ⁺	2.0x10 ⁶	5.6x10 ⁻⁴			Cond	25	Me ₂ SO (Pot for k_f)	870
	Tl ⁺	6.9x10 ⁷	11.0			Cond	25	H ₂ O	873
	Tl ⁺	5.74x10 ⁹	1.41x10 ⁻¹			Cond	25	DMF	873
	Tl ⁺	6.13x10 ⁶	5.99x10 ⁻³			Cond	25	EtOH	873
	Tl ⁺	3.56x10 ⁶	4.28x10 ⁻⁴			Cond	25	MeCN	873a
	Tl ⁺	3.55x10 ⁶	4.27x10 ⁻⁴ + 8.98[HA]			Cond	25	MeCN (CF ₃ CO ₂ H-catalyzed), ($k_d = k + k_{HA}[HA]$)	874
	Tl ⁺	1.49x10 ⁹	2.58x10 ⁻²			Cond	25	MeOH	873
Tl ⁺	1.28x10 ⁷	2.03			Cond	25	Me ₂ SO	873	
Tl ⁺	8.39x10 ⁹	6.22x10 ⁻³			Cond	25	PC	873	
Pb ²⁺		1.71			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 3.83 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		12.9			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 8.93 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		36.6			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 14.0 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		80.0			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 19.2 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		0.029			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 0.51 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		0.879			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 2.42 x 10 ⁻² M OH ⁻)	1155	
Pb ²⁺		4.42			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 5.05 x 10 ⁻² M OH ⁻)	1155	

Table V (Continued)

ligand	cation	$k^f, M^{-1} s^{-1}$	k_d, s^{-1}	ΔH^{*a} kJ/mol	ΔS^{*a} J/K mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Pb ²⁺		21.7			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 10.1 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		53.2			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 15.2 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.066			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 0.76 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		12.0			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 7.86 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		66.1			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 15.4 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		125			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 20.3 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺	1.5x10 ⁵	6.5x10 ⁻⁴			Spec	25	Me ₂ SO	870
CHART LXXI									
[2.2.2]-1	Li ⁺		420	11.6(d)	-157(d)	NMR	25	MeCN (mechanism 1)	1152
	Li ⁺		794	20.2(d)	-121(d)	NMR	25	Me ₂ CO (mechanism 1)	1152
	Li ⁺		507	15.0(d)	-143(d)	NMR	25	PC (mechanism 1)	1152
	Na ⁺	1.6x10 ⁸		28.9	8.8	US	25	PC (anion = ClO ₄ ⁻), [step 3: Na ⁺ L = (NaL) ⁺]	896
	K ⁺		6.5			Cond	25	D ₂ O, (0.2-2)x10 ⁻³ M DCl	1148
	K ⁺		7.5			Cond	25	H ₂ O, (0.2-2)x10 ⁻³ M HCl	1148
	K ⁺			60.2	-25.1	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.2 M Et ₄ NCl	1156
	K ⁺			56.5	-37.7	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.4 M Et ₄ NCl	1156
	K ⁺			49.0	-58.6	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.6 M Et ₄ NCl	1156
	K ⁺			39.7	-83.7	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.8 M Et ₄ NCl	1156
	K ⁺			66.1	-37.7	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.2 M Et ₄ NBr	1156
	K ⁺			68.6	-4.18	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.4 M Et ₄ NBr	1156
	K ⁺			69.9	-8.37	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.6 M Et ₄ NBr	1156
	K ⁺			61.9	-20.9	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 1.0 M Et ₄ NBr	1156
	K ⁺			71.1	8.37	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.2 M Et ₄ NI	1156
	K ⁺			73.2	12.6	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.4 M Et ₄ NI	1156
	K ⁺			72.8	20.9	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.5 M Et ₄ NI	1156
	K ⁺			71.5	0	Spec	8-25	H ₂ O, 2.24x10 ⁻² M Me ₄ NOH, 0.6 M Et ₄ NI	1156
	K ⁺			92.0	117	Spec	8-25	H ₂ O, 6.25x10 ⁻² M Me ₄ NOH, 0.2-0.8 M Et ₄ NCl	1156
	K ⁺			87.9	96.2	Spec	8-25	H ₂ O, 6.25x10 ⁻² M Me ₄ NOH, 0.2 M Et ₄ NBr	1156
	K ⁺			62.8	25.1	Spec	8-25	H ₂ O, 6.25x10 ⁻² M Me ₄ NOH, 0.4 M Et ₄ NBr	1156
	K ⁺			66.9	0	Spec	8-25	H ₂ O, 6.25x10 ⁻² M Me ₄ NOH, 0.6 M Et ₄ NBr	1156
	K ⁺			50.2	-8.37	Spec	8-25	H ₂ O, 6.25x10 ⁻² M Me ₄ NOH, 1.0 M Et ₄ NBr	1156
	K ⁺	3.0x10 ⁸	7.50+146.9 x[H ⁺]			Cond	25	H ₂ O (HClO ₄) ($k_d = k + k_H[H^+]$)	1157
	K ⁺	1.2x10 ⁷	3.70+108.7 x[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.1$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	2.2x10 ⁷	1.72+77.8[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.2$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	4.4x10 ⁷	0.87+60.5[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.3$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	8.3x10 ⁷	0.66+46.0[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.4$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	1.75x10 ⁸	0.44+40.7[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.5$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	2.46x10 ⁸	0.31+38.2[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.6$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	1.14x10 ⁹	0.057+99.9[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.9$), (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	K ⁺	1.16x10 ⁹	0.0046			Cond	25	MeCN (Cl ₂ CHCO ₂ H)	1157
	K ⁺	7.2x10 ⁸		24.7	7.36	US	25	PC (anion = ClO ₄ ⁻), [step 1&2: K ⁺ + L = Na ⁺ L]	896
	K ⁺	1.1x10 ⁸		27.2	0.50	US	25	PC (anion = ClO ₄ ⁻), [step 3: K ⁺ L = (KL) ⁺]	896
	Rb ⁺	6.0x10 ⁸		16.3	-22.2	US	25	PC (anion = ClO ₄ ⁻), [step 1&2: Rb ⁺ + L = Rb ⁺ L]	896
	Rb ⁺	7.6x10 ⁷		26.4	-5.9	US	25	PC (anion = ClO ₄ ⁻), [step 3: Rb ⁺ L = (RbL) ⁺]	896
	Cs ⁺			42.7(d)	71.1(d)	NMR	-12 to -78	DMF	899
	Ca ²⁺		0.169			Cond	25	D ₂ O, 0.29x10 ⁻³ M DCl	1148
	Ca ²⁺		0.248			Cond	25	D ₂ O, 0.63x10 ⁻³ M DCl	1148
	Ca ²⁺		0.353			Cond	25	D ₂ O, 0.92x10 ⁻³ M DCl	1148

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^\ddagger, \text{kJ/mol}$	$\Delta S^\ddagger, \text{J/K}\cdot\text{mol}$	method ^b	$T, ^\circ\text{C}$	conditions ^c	ref
	Ca ²⁺		0.430			Cond	25	D ₂ O, 1.26x10 ⁻³ M DCl	1148
	Ca ²⁺		0.577			Cond	25	D ₂ O, 1.60x10 ⁻³ M DCl	1148
	Ca ²⁺		0.329			Cond	25	D ₂ O, $I = 0.032$ (Et ₄ NBr), 0.19x10 ⁻² M CH ₃ CO ₂ D	1148
	Ca ²⁺		0.423			Cond	25	D ₂ O, $I = 0.032$ (Et ₄ NBr), 0.29x10 ⁻² M CH ₃ CO ₂ D	1148
	Ca ²⁺		0.642			Cond	25	D ₂ O, $I = 0.032$ (Et ₄ NBr), 0.49x10 ⁻² M CH ₃ CO ₂ D	1148
	Ca ²⁺		0.831			Cond	25	D ₂ O, $I = 0.032$ (Et ₄ NBr), 0.69x10 ⁻² M CH ₃ CO ₂ D	1148
	Ca ²⁺		1.21			Cond	25	D ₂ O, $I = 0.032$ (Et ₄ NBr), 0.99x10 ⁻² M CH ₃ CO ₂ D	1148
	Ca ²⁺		0.415			Cond	25	H ₂ O, 0.35x10 ⁻³ M HCl	1148
	Ca ²⁺		0.636			Cond	25	H ₂ O, 0.75x10 ⁻³ M HCl	1148
	Ca ²⁺		0.867			Cond	25	H ₂ O, 1.0x10 ⁻³ M HCl	1148
	Ca ²⁺		1.00			Cond	25	H ₂ O, 1.10x10 ⁻³ M HCl	1148
	Ca ²⁺		1.29			Cond	25	H ₂ O, 1.50x10 ⁻³ M HCl	1148
	Ca ²⁺		1.34			Cond	25	H ₂ O, 1.80x10 ⁻³ M HCl	1148
	Ca ²⁺		2.25			Cond	25	H ₂ O, 2.80x10 ⁻³ M HCl	1148
	Ca ²⁺		2.13			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 1.35x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		2.68			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 2.06x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		3.14			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 2.77x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		4.03			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 3.48x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		4.73			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 4.19x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		0.735			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 0.78x10 ⁻² M HCO ₂ H	1148
	Ca ²⁺		1.11			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 1.64x10 ⁻² M HCO ₂ H	1148
	Ca ²⁺		1.46			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 2.50x10 ⁻² M HCO ₂ H	1148
	Ca ²⁺		1.83			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 3.35x10 ⁻² M HCO ₂ H	1148
	Ca ²⁺		2.21			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 4.21x10 ⁻² M HCO ₂ H	1150
	Ca ²⁺		2.58			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 5.07x10 ⁻² M HCO ₂ H	1148
	Ca ²⁺		1.13			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 1.52x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		1.90			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 3.05x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		2.87			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 4.63x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		3.53			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 6.20x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		4.41			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 7.80x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		5.35			Cond	25	H ₂ O, $I = 0.06$ (Et ₄ NBr), 9.35x10 ⁻² M CH ₂ ClCO ₂ H	1148
	Ca ²⁺		0.761			Cond	25	H ₂ O, $I = 0.032$ (Et ₄ NBr), 0.19x10 ⁻² M CH ₃ CO ₂ H	1148
	Ca ²⁺		1.11			Cond	25	H ₂ O, $I = 0.032$ (Et ₄ NBr), 0.29x10 ⁻² M CH ₃ CO ₂ H	1148
	Ca ²⁺		1.66			Cond	25	H ₂ O, $I = 0.032$ (Et ₄ NBr), 0.49x10 ⁻² M CH ₃ CO ₂ H	1148
	Ca ²⁺		2.26			Cond	25	H ₂ O, $I = 0.032$ (Et ₄ NBr), 0.69x10 ⁻² M CH ₃ CO ₂ H	1148
	Ca ²⁺		3.17			Cond	25	H ₂ O, $I = 0.032$ (Et ₄ NBr), 0.99x10 ⁻² M CH ₃ CO ₂ H	1148
	Ca ⁺		85.0			Cond	25	H ₂ O, $I = 0.03\cdot 0.06$ (CH ₂ ClCO ₂ H-catalyzed)	1149
	Ca ⁺		40.4			Cond	25	H ₂ O, $I = 0.03\cdot 0.06$ (HCO ₂ H-catalyzed)	1149
	Ca ⁺		50.8			Cond	25	H ₂ O, $I = 0.03\cdot 0.06$ (CH ₂ ClCH ₂ CO ₂ H-catalyzed)	1149
	Ca ⁺		27.1			Cond	25	H ₂ O, $I = 0.03\cdot 0.06$ (CH ₃ CO ₂ H-catalyzed)	1149
	Ca ²⁺	1.1x10 ⁸	12	58.6 28.9(d)	38.9 -133(d)	Cond	25	H ₂ O, pH 11.3 [step 1&2: Ca ²⁺ + L = Ca ²⁺ L]	900
	Ca ²⁺	120	10	54.4 88.7(d)	-20.5 67.4(d)	Cond	25	H ₂ O, pH 11.3 [step 3: Ca ²⁺ L = (CaL) ²⁺]	900
	Ca ²⁺	2.2x10 ⁸	3.0x10 ⁻¹			Pot	25	DMF (Cond for k_f)	867
	Ca ²⁺	~6x10 ⁵	1.0x10 ⁻⁶			Cond	25	PC	867
	Sr ²⁺	1.6x10 ⁸	37	50.2 23.4(d)	8.37 -133(d)	Cond	25	H ₂ O, pH 11.3 [step 1&2: Sr ²⁺ + L = Sr ²⁺ L]	900
	Sr ²⁺	120	2.5	41.0 91.2(d)	-64.0 74.9(d)	Cond	25	H ₂ O, pH 11.3 [step 3: Sr ²⁺ L = (SrL) ²⁺]	900

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{*}, kJ/mol$	$\Delta S^{*}, J/K.mol$	method ^b	$T, ^\circ C$	conditions ^c	ref
	Sr ²⁺	2.9x10 ⁴	2.0x10 ⁻⁶			Pot	25	DMF (Cond for k_f)	867
	Sr ²⁺	6.6x10 ²	5.2x10 ⁻³			Pot/Cond	25	Me ₂ SO (Cond for k_f)	867
	Ba ²⁺	3.6x10 ⁸	100	28.0	-51.0	Cond	25	H ₂ O, pH 11.3 [step 1&2: Ba ²⁺ + L = Ba ²⁺ L]	900
	Ba ²⁺	500	~10 ⁻⁹	28.9	-90.4	Cond	25	H ₂ O, pH 11.3 [step 3: Ba ²⁺ L = (BaL) ²⁺]	900
	Ba ²⁺	6.1x10 ⁶	2.5x10 ⁻³			Pot	25	DMF (Cond for k_f)	867
	Ba ²⁺	2.3x10 ⁴	8.0x10 ⁻³			Cond	25	Me ₂ SO	867
	Ag ⁺	0.203				Cond	25	D ₂ O, 0.172x10 ⁻³ M DClO ₄	1148
	Ag ⁺	0.90				Cond	25	D ₂ O, 0.19x10 ⁻³ M DClO ₄	1148
	Ag ⁺	0.60				Cond	25	D ₂ O, 0.36x10 ⁻³ M DClO ₄	1148
	Ag ⁺	1.40				Cond	25	D ₂ O, 0.43x10 ⁻³ M DClO ₄	1148
	Ag ⁺	2.27				Cond	25	D ₂ O, 0.76x10 ⁻³ M DClO ₄	1148
	Ag ⁺	2.64				Cond	25	D ₂ O, 0.86x10 ⁻³ M DClO ₄	1148
	Ag ⁺	3.45				Cond	25	D ₂ O, 1.15x10 ⁻³ M DClO ₄	1148
	Ag ⁺	4.06				Cond	25	D ₂ O, 1.25x10 ⁻³ M DClO ₄	1148
	Ag ⁺	4.64				Cond	25	D ₂ O, 1.52x10 ⁻³ M DClO ₄	1148
	Ag ⁺	4.90				Cond	25	D ₂ O, 1.63x10 ⁻³ M DClO ₄	1148
	Ag ⁺	5.50				Cond	25	D ₂ O, 1.92x10 ⁻³ M DClO ₄	1148
	Ag ⁺	6.09				Cond	25	D ₂ O, 2.02x10 ⁻³ M DClO ₄	1148
	Ag ⁺	7.10				Cond	25	D ₂ O, 2.36x10 ⁻³ M DClO ₄	1148
	Ag ⁺	0.78				Cond	25	H ₂ O, 0.141x10 ⁻³ M HClO ₄	1148
	Ag ⁺	0.89				Cond	25	H ₂ O, 0.169x10 ⁻³ M HClO ₄	1148
	Ag ⁺	2.97				Cond	25	H ₂ O, 0.496x10 ⁻³ M HClO ₄	1148
	Ag ⁺	3.88				Cond	25	H ₂ O, 0.675x10 ⁻³ M HClO ₄	1148
	Ag ⁺	5.25				Cond	25	H ₂ O, 0.860x10 ⁻³ M HClO ₄	1148
	Ag ⁺	7.42				Cond	25	H ₂ O, 1.25x10 ⁻³ M HClO ₄	1148
	Ag ⁺	7.93				Cond	25	H ₂ O, 1.45x10 ⁻³ M HClO ₄	1148
	Ag ⁺	9.43				Cond	25	H ₂ O, 1.64x10 ⁻³ M HClO ₄	1148
	Ag ⁺	12.4				Cond	25	H ₂ O, 2.02x10 ⁻³ M HClO ₄	1148
	Ag ⁺	13.3				Cond	25	H ₂ O, 2.23x10 ⁻³ M HClO ₄	1148
	Ag ⁺	15.6x10 ⁸	0.46+4.7 x10 ⁸ [H ⁺]			Cond	25	H ₂ O (HClO ₄) ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	2.5x10 ⁸	0.69+7.4 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.05) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	1.3x10 ⁸	0.80+7.9 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.1) (HClO ₄), ($k_d = k + k_H[H^+]$)	1158
	Ag ⁺	1.1x10 ⁸	1.00+8.9 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.2) (HClO ₄), ($k_d = k + k_H[H^+]$)	1158
	Ag ⁺	1.1x10 ⁸	1.04+8.8 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.3) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	1.5x10 ⁸	1.06+8.9 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.5) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	2.4x10 ⁸	1.18+19.1 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	4.3x10 ⁸	0.78+23.5 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.9) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	5.4x10 ⁸	0.70+33.4 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.95) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺		0.5+51.5 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.98) (HClO ₄), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	4.2x10 ⁸	0.5+5.9 x10 ⁸ [H ⁺]			Cond	25	MeCN·H ₂ O (anion = ClO ₄ ⁻), (CH ₃ SO ₃ H), ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	5.0x10 ⁸	0.60+1.1 x10 ⁸ [H ⁺]			Cond	25	MeCN (CF ₃ SO ₃ H) ($k_d = k + k_H[H^+]$)	1157
	Ag ⁺	3.8x10 ⁸	0.45+9.1x10 ⁸ [PbCF ₃ SO ₃ ⁺]			Cond	25	MeCN + Pb(CF ₃ SO ₃) ₂ , (anion = CF ₃ SO ₃ ⁻)	1157,1159(k_d)
	Ag ⁺	4.2x10 ⁸	0.50+9.5x10 ⁸ [PbCF ₃ SO ₃ ⁺]			Cond	25	MeCN + Pb(CF ₃ SO ₃) ₂ , (anion = ClO ₄ ⁻)	1157,1159(k_d)
	Ag ⁺	5.0x10 ⁸	0.60+6.9x10 ⁸ [PbClO ₄ ⁺]			Cond	25	MeCN + Pb(ClO ₄) ₂ , (anion = ClO ₄ ⁻)	1157
	Ag ⁺	3.3x10 ⁸	0.4+3.0x10 ⁸ [Na ⁺]			Cond	25	MeCN + Pb(ClO ₄) ₂ , (anion = ClO ₄ ⁻)	1157
	Ag ⁺	7.5x10 ⁸	0.9+4.3x10 ⁸ [H ⁺]			Cond	25	MeCN + FSO ₃ H, (anion = ClO ₄ ⁻)	1157
	Ag ⁺		0.60			Cond	25	MeCN (X _{MeCN} > 1)	1159
	Ag ⁺	2.9x10 ⁸	0.10			Cond	25	Me ₂ SO	870
	Pb ²⁺	2.1x10 ⁶	1.25x10 ⁻²			Cond	25	Me ₂ SO	870
	Tl ⁺	2.4x10 ⁷	5.99			Cond	25	H ₂ O	873
	Tl ⁺	2.4x10 ⁷	5.5+2200[H ⁺]			Cond	25	H ₂ O (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874,1160(k_d)
	Tl ⁺	2.1x10 ⁷	1.82x10 ⁻¹			Cond	25	DMF	873
	Tl ⁺	1.37x10 ⁹	1.34x10 ⁻²			Cond	25	EtOH	873
	Tl ⁺	1.02x10 ⁸	2.55+844[H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.1) (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874
	Tl ⁺	2.17x10 ⁸	0.751+281[H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.3) (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874
	Tl ⁺	5.78x10 ⁸	0.325+170[H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.52) (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874
	Tl ⁺	13.1x10 ⁸	0.194+127[H ⁺]			Cond	25	MeCN·H ₂ O (X _{MeCN} = 0.7) (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^\ddagger, a$ kJ/mol	$\Delta S^\ddagger, a$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Tl ⁺	48.1x10 ⁶	6.05x10 ⁻² + 136[H ⁺]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.8$) (HClO ₄ -catalyzed) ($k_d = k + k_H[H^+]$)	874
	Tl ⁺	32.6x10 ⁶	9.19x10 ⁻³ + 119[HA]			Cond	25	MeCN·H ₂ O ($X_{MeCN} = 0.9$) (CF ₃ CO ₂ H-catalyzed) ($k_d = k + k_{HA}[HA]$)	874
	Tl ⁺	2.42x10 ⁹	1.16x10 ⁻³ + 13.2[HA]			Cond	25	MeCN (CF ₃ CO ₂ H- catalyzed) ($k_d = k + k_{HA}[HA]$)	874
	Tl ⁺	2.12x10 ⁹	1.16x10 ⁻³			Cond	25	MeCN	873a
	Tl ⁺	9.93x10 ⁶	5.21x10 ⁻²			Cond	25	MeOH	873
	Tl ⁺	3.73x10 ⁶	1.87			Cond	25	Me ₂ SO	873
	Tl ⁺	8.07x10 ⁹	1.34x10 ⁻²			Cond	25	PC	873
	Pb ²⁺		0.109			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 3.83 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.220			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 8.93 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.393			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 14.0 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.618			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 19.2 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.956			Spec	25	H ₂ O, $I = 0.5$ (LiClO ₄ + 24.3 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.038			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 3.53 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.110			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 7.06 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.265			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 12.1 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.493			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 17.2 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		1.06			Spec	25	H ₂ O, $I = 0.5$ (NaClO ₄ + 25.2 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.118			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 7.09 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.436			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 15.4 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		0.745			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 20.3 x 10 ⁻² M OH ⁻)	1155
	Pb ²⁺		1.13			Spec	25	H ₂ O, $I = 0.5$ (KCF ₃ SO ₃ + 25.3 x 10 ⁻² M OH ⁻)	1155
B[2.2.2]-1	Ca ²⁺	2.4x10 ³	0.38	50.2	-12.6	Spec	25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Ca ²⁺		1.56x10 ³	38.1(d)	-126(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Ca ²⁺	3.9x10 ³	5.2x10 ⁻¹			Cond	25	H ₂ O	867
	Ca ²⁺	1.9x10 ²	6.0x10 ⁻¹			Pot	25	DMF (Cond for k_f)	867
	Ca ²⁺		~1.0x10 ⁻³			Spec	25	MeOH, 0.002 M CH ₃ SO ₃ H, 0.05 M Et ₄ NCl	1161
	Ca ²⁺		~1.2x10 ⁻³			Spec	25	MeOH, 0.002 M CH ₃ SO ₃ H, 0.1 M Et ₄ NCl	1161
	Ca ²⁺		~2.1x10 ⁻³			Spec	25	MeOH, 0.002 M CH ₃ SO ₃ H, 0.18 M Et ₄ NCl	1161
	Ca ²⁺		~2.7x10 ⁻³			Spec	25	MeOH, 0.002 M CH ₃ SO ₃ H, 0.24 M Et ₄ NCl	1161
	Ca ²⁺		~1.2x10 ⁻³			Spec	25	MeOH, 0.003 M CH ₃ SO ₃ H, 0.05 M Et ₄ NCl	1161
	Ca ²⁺		~1.5x10 ⁻³			Spec	25	MeOH, 0.003 M CH ₃ SO ₃ H, 0.1 M Et ₄ NCl	1161
	Ca ²⁺		~2.5x10 ⁻³			Spec	25	MeOH, 0.003 M CH ₃ SO ₃ H, 0.18 M Et ₄ NCl	1161
	Ca ²⁺		~3.3x10 ⁻³			Spec	25	MeOH, 0.003 M CH ₃ SO ₃ H, 0.24 M Et ₄ NCl	1161
	Ca ²⁺		~1.4x10 ⁻³			Spec	25	MeOH, 0.004 M CH ₃ SO ₃ H, 0.05 M Et ₄ NCl	1161
	Ca ²⁺		~1.8x10 ⁻³			Spec	25	MeOH, 0.004 M CH ₃ SO ₃ H, 0.1 M Et ₄ NCl	1161
	Ca ²⁺		~2.9x10 ⁻³			Spec	25	MeOH, 0.004 M CH ₃ SO ₃ H, 0.18 M Et ₄ NCl	1161
	Ca ²⁺		~3.9x10 ⁻³			Spec	25	MeOH, 0.004 M CH ₃ SO ₃ H, 0.24 M Et ₄ NCl	1161
	Ca ²⁺		~1.6x10 ⁻³			Spec	25	MeOH, 0.005 M CH ₃ SO ₃ H, 0.05 M Et ₄ NCl	1161
	Ca ²⁺		~2.1x10 ⁻³			Spec	25	MeOH, 0.005 M CH ₃ SO ₃ H, 0.1 M Et ₄ NCl	1161
	Ca ²⁺		~3.4x10 ⁻³			Spec	25	MeOH, 0.005 M CH ₃ SO ₃ H, 0.18 M Et ₄ NCl	1161
	Ca ²⁺		~4.7x10 ⁻³			Spec	25	MeOH, 0.005 M CH ₃ SO ₃ H, 0.24 M Et ₄ NCl	1161
	Ca ²⁺		~1.8x10 ⁻³			Spec	25	MeOH, 0.006 M CH ₃ SO ₃ H, 0.05 M Et ₄ NCl	1161
	Ca ²⁺		~2.4x10 ⁻³			Spec	25	MeOH, 0.006 M CH ₃ SO ₃ H, 0.1 M Et ₄ NCl	1161
	Ca ²⁺		~3.9x10 ⁻³			Spec	25	MeOH, 0.006 M CH ₃ SO ₃ H, 0.18 M Et ₄ NCl	1161
	Ca ²⁺		~5.3x10 ⁻³			Spec	25	MeOH, 0.006 M CH ₃ SO ₃ H, 0.24 M Et ₄ NCl	1161

Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^\ddagger, a$ kJ/mol	$\Delta S^\ddagger, a$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Ca ²⁺		~0.6x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1 M Et ₄ NClO ₄ , 0.002 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.8x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1M Et ₄ NClO ₄ , 0.003 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~1.1x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1M Et ₄ NClO ₄ , 0.004 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~1.3x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1M Et ₄ NClO ₄ , 0.005 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~1.5x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1M Et ₄ NClO ₄ , 0.006 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~1.8x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NBr or 0.1M Et ₄ NClO ₄ , 0.007 M CH ₃ SO ₃ H	1161
	Ca ²⁺		2.2x10 ⁻⁴ + 8x10 ⁻² [H ⁺]			Spec	25	MeOH, [Et ₄ NCl] -> 0, [CH ₃ SO ₃ H] = (2.0-7.0)x 10 ⁻³ ($k_d = k + k_H[H^+]$)	1161
	Ca ²⁺		(2.2x10 ⁻⁴ + 5.5x10 ⁻³ [Cl]) + (8x10 ⁻²) + 2.1x10 ⁻² [Cl ⁻][H ⁺]			Spec	25	MeOH, [Et ₄ NCl] = 0.05-0.24 M, [CH ₃ SO ₃ H] = (2.0-7.0)x10 ⁻³ M, { $k_d = (k + k_{Cl}[Cl^-]) + (k_H + k_{H,Cl}[Cl^-])[H^+]$ }	1161
	Ca ²⁺	1.8x10 ⁵	1.4x10 ⁻⁵			Cond	25	PC	867
	Sr ²⁺	7.3x10 ³	3.3x10 ⁻⁴	44.4	-20.9	Spec	25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Sr ²⁺		0.134	86.2(d)	-20.9(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Sr ²⁺	9.2x10 ³	2.9x10 ⁻⁴	50.6	-92.0	Pot	25	H ₂ O (Cond for k_f)	867
	Sr ²⁺	3.8x10 ³	4.5x10 ⁻³			Pot	25	DMF (Cond for k_f)	867
	Sr ²⁺	1.6x10 ²	9.6x10 ⁻³			Pot/Cond	25	Me ₂ SO (Cond for k_f)	867
	Ba ²⁺	7.0x10 ⁴	7.5x10 ⁻⁴	29.3	-54.4	Spec	25	H ₂ O, 0.1 M Me ₄ NCl, pH 11-11.5	907
	Ba ²⁺		4.9x10 ⁻²	90.0(d)	0(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Ba ²⁺	4.5x10 ⁴	5.5x10 ⁻⁴	58.2	-75.3	Pot/Cond	25	H ₂ O (Cond for k_f)	867
	Ba ²⁺	6.7x10 ⁴	2.2x10 ⁻²			Pot	25	DMF (Cond for k_f)	867
	Ba ²⁺	5.8x10 ³	1.0x10 ⁻¹			Cond	25	Me ₂ SO	867
	Ag ⁺	1.4x10 ⁶	0.15			Cond	25	Me ₂ SO	870
	Tl ⁺	5.58x10 ⁷	8.06x10			Cond	25	H ₂ O	873
	Tl ⁺	2.51x10 ⁷	4.07			Cond	25	DMF	873
	Tl ⁺	2.55x10 ⁷	0.28			Cond	25	EtOH	873
	Tl ⁺	4.52x10 ⁷	2.62x10 ⁻³ + 45.08[HA]			Cond	25	MeCN (CF ₃ CO ₂ H-catalyzed) ($k_d = k + k_{HA}[HA]$)	874
	Tl ⁺	4.57x10 ⁷	2.63x10 ⁻³			Cond	25	MeCN	873a
	Tl ⁺	2.11x10 ⁸	1.24			Cond	25	MeOH	873
	Tl ⁺	4.02x10 ⁵	8.6			Cond	25	Me ₂ SO	873
	Pb ²⁺	8.0x10 ⁴	4.0x10 ⁻²			Cond	25	Me ₂ SO	870
	Tl ⁺	1.01x10 ⁹	1.88x10 ⁻²			Cond	25	PC	873
B ₂ [2.2.2]-1	Ca ²⁺	1.1x10 ²	0.24	44.8	-58.6	Spec	25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Ca ²⁺		133	41.0(d)	-113(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Ca ²⁺	5.1x10 ²	1.9x10 ⁻¹	51.9	-29.3	Spec	25	H ₂ O	867
	Ca ²⁺		~0.38x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.002 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.42x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.003 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.47x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.004 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.52x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.005 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.57x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.006 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.62x10 ⁻³			Spec	25	MeOH, 0.05-0.1 M Et ₄ NCl, 0.007 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.52x10 ⁻³			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.002 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.57x10 ⁻³			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.003 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.62x10 ⁻³			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.004 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.67x10 ⁻³			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.005 M CH ₃ SO ₃ H	1161
	Ca ²⁺		~0.72x10 ⁻³			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.006 M CH ₃ SO ₃ H	1161

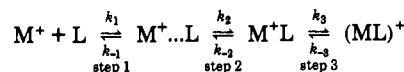
Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K-mol	method ^b	$T, ^\circ C$	conditions ^c	ref
	Ca ²⁺		$\sim 0.77 \times 10^{-3}$			Spec	25	MeOH, 0.2 M Et ₄ NCl, 0.007 M CH ₃ SO ₃ H	1161
	Ca ²⁺	4.4x10 ⁴	1.1x10 ⁻⁵			Cond	25	PC	867
	Sr ²⁺	2.9x10 ²	6.3x10 ⁻⁴	40.6	-62.8	Spec	25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Sr ²⁺		0.212	84.1(d)	-25.1(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Sr ²⁺	1.4x10 ³	5.8x10 ⁻⁴			Pot	25	H ₂ O (Cond for k_f)	867
	Sr ²⁺	4.2x10 ²	7.9x10 ⁻³			Pot	25	DMF (Cond for k_f)	867
	Sr ²⁺	2.5x10	9.1x10 ⁻³			Pot/Cond	25	Me ₂ SO (Cond for k_f)	867
	Ba ²⁺	4.6x10 ³	1.73x10 ⁻²	44.8	-25.1	Spec	25	H ₂ O, 0.1 M Et ₄ NCl, pH 11-11.5	907
	Ba ²⁺		0.31	60.2(d)	-75.3(d)	Spec	25	H ₂ O, 0.1 M Et ₄ NCl (HCl catalyzed)	907
	Ba ²⁺	6.4x10 ³	1.5x10 ⁻²			Pot/Cond	25	H ₂ O (Cond for k_f)	867
	Ba ²⁺	1.1x10 ⁴	2.2x10 ⁻¹			Pot	25	DMF (Cond for k_f)	867
	Ba ²⁺	9.9x10 ²	4.0x10 ⁻¹			Cond	25	Me ₂ SO	867
	Ag ⁺	1.7x10 ⁶	0.30			Cond	25	Me ₂ SO	870
	Tl ⁺	6.5x10 ⁶	1.6x10 ²			Cond	25	H ₂ O	873
	Tl ⁺	2.90x10 ⁷	2.10x10			Cond	25	DMF	873
	Tl ⁺	3.85x10 ⁶	0.99			Cond	25	EtOH	873
	Tl ⁺	9.04x10 ⁶	5.32x10 ⁻²			Cond	25	MeCN	873a
	Tl ⁺	9.10x10 ⁶	5.33x10 ⁻²⁺ 17.05[HA]			Cond	25	MeCN (CF ₃ CO ₂ H- catalyzed)	874
	Tl ⁺	8.62x10 ⁶	4.32			Cond	25	MeOH	873
	Tl ⁺	$\sim 1 \times 10^4$	~ 0.3			Cond	25	Me ₂ SO	873
	Tl ⁺	1.62x10 ⁶	2.51x10 ⁻²			Cond	25	PC	873
	Pb ²⁺	2.2x10 ⁴	0.13			Cond	25	Me ₂ SO	870
				CHART LXXV					
[3.3.1.1]-1	K ⁺	6.5x10 ⁴	26				25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Rb ⁺	5.8x10 ⁴	4				25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
	Cs ⁺	2.3x10 ⁴	9				25	H ₂ O, 0.1 M Me ₄ NNO ₃	933
				CHART LXXXVI					
Bridged Calix-11	Na ⁺	1.3x10 ⁴	6.0x10 ⁻⁶	129.7(d)	33.5(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺		6.4x10 ⁻⁷			NMR	55	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺		3.4x10 ⁻⁶			NMR	70	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Na ⁺		4.0x10 ⁻⁵			NMR	85	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺	2.2x10 ⁵	1.0x10 ⁻⁶	146.4(d)	92.9(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺		9.2x10 ⁻⁷			NMR	75	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺		2.5x10 ⁻⁶			NMR	80	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	K ⁺		5.5x10 ⁻⁶			NMR	85	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
	Rb ⁺	2.5x10 ⁵	6.9x10 ⁻⁶			NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	757
				CHART LXXVII					
Bridged Spher-8	Li ⁺	3.8x10 ⁵	1.9x10 ⁻⁷	75(d)	126(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Li ⁺		7.5x10 ⁻⁶			NMR	65.1	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Li ⁺		2.6x10 ⁻⁵			NMR	79.6	D ₂ O sat'd CDCl ₃ (anion = picrate)	493
	Li ⁺		6.9x10 ⁻⁵			NMR	94.8	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺	1.2x10 ⁶	2.2x10 ⁻⁴	38(d)	-197(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺		6.0x10 ⁻⁴			NMR	40	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺		7.2x10 ⁻⁴			NMR	50	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
Bridged Spher-9	Li ⁺	3.0x10 ⁵	6.7x10 ⁻⁷	92(d)	-56(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Li ⁺		2.1x10 ⁻⁵			NMR	54.5	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Li ⁺		9.3x10 ⁻⁵			NMR	69.9	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Li ⁺		4.2x10 ⁻⁴			NMR	85.4	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺	8.6x10 ⁴	1.6x10 ⁻⁶	96(d)	-84(d)	NMR	25	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺		4.2x10 ⁻⁶			NMR	95.3	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺		1.0x10 ⁻⁵			NMR	110.2	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
	Na ⁺		4.9x10 ⁻⁵			NMR	125.2	D ₂ O sat'd CDCl ₃ (anion = picrate)	493, 494
Dinactin	Na ⁺	5x10 ⁷	4.6x10 ⁴			US	25	MeOH (anion = Cl ⁻)	949

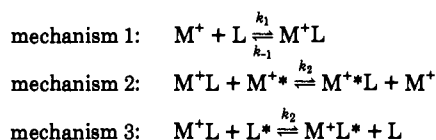
Table V (Continued)

ligand	cation	$k_f, M^{-1} s^{-1}$	k_d, s^{-1}	$\Delta H^{\ddagger, a}$ kJ/mol	$\Delta S^{\ddagger, a}$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref	
Monactin	Na ⁺	6.3x10 ⁷	5.8x10 ⁴			TJ	25	MeOH, 0.1 M Bu ₄ NClO ₄	949	
	K ⁺	>1.1x10 ⁶	21			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 1)	952	
	Cs ⁺	3.4x10 ⁸	8.2x10 ⁴			US	25	MeOH (anion = Cl ⁻)	949	
	Na ⁺	3x10 ⁸	6x10 ⁶			US	25	MeOH (anion = Cl ⁻)	949	
Nonactin	K ⁺	>1.1x10 ⁶	22.9			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 1)	952	
	K ⁺	>1.6x10 ⁶	32.3			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 1)	952	
Trinactin	K ⁺		<70			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 3)	952	
	Na ⁺	7.2x10 ⁷	4.2x10 ⁴			TJ	25	MeOH, 0.1 M Bu ₄ NClO ₄	949	
Valinomycin	K ⁺	>0.9x10 ⁶	18			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 1)	952	
	Na ⁺	1.4x10 ⁷	2x10 ⁸			Spec	25	MeOH, 0.1 M Bu ₄ NClO ₄	962	
	K ⁺	3.2x10 ⁸	63.1			Polg	23	MeCN, 0.05 M Bu ₄ NClO ₄	950	
	K ⁺		~71			Polg	25?	MeCN, 0.025 M Bu ₄ NClO ₄	961	
	K ⁺		<200			NMR	25	MeOH-CDCl ₃ (8:2/v:v) (mechanism 3)	952	
	K ⁺	3.5x10 ⁷	1.3x10 ⁸			Spec	25	MeOH, 0.1 M Bu ₄ NClO ₄	962	
	Rb ⁺	4x10 ⁸	50.1			Polg	23	MeCN, 0.05 M Bu ₄ NClO ₄	950	
	Rb ⁺		~45			Polg	25	MeCN, 0.025 M Bu ₄ NClO ₄	961	
	Rb ⁺	5.5x10 ⁷	7.5x10 ²			Spec	25	MeOH, 0.1 M Bu ₄ NClO ₄	962	
	Cs ⁺	1.6x10 ⁸	158			Polg	23	MeCN, 0.05 M Bu ₄ NClO ₄	950	
	Cs ⁺		~158			Polg	25	MeCN, 0.025 M Bu ₄ NClO ₄	961	
	Cs ⁺	2x10 ⁷	2.2x10 ⁸			Spec	25	MeOH, 0.1 M Bu ₄ NClO ₄	962	
cyclo(Glu-Pro) ₂ ^d	Tl ⁺		~178			Polg	25	MeCN, 0.025 M Bu ₄ NClO ₄	961	
	NH ₄ ⁺	1.3x10 ⁷	2.5x10 ⁶			Spec	25	MeOH, 0.1 M Bu ₄ NClO ₄	962	
	Ba ²⁺	0.52				CD		MeOH-H ₂ O (95:1)	973	
	Ba ²⁺	0.57				CD		MeOH-H ₂ O (95:1)	973	
	cyclo(Glu(OMe)-Pro) ₂ ^d	K ⁺	4.4x10 ⁻⁴				CD	25	86% MeOH (anion = Cl ⁻)	985
		Ba ²⁺	1.9x10 ⁻⁴				CD	25	95% MeOH (anion = ClO ₄ ⁻)	985
	cyclo(Lys(Z)-Pro) ₄ ^d	Ba ²⁺	3.3x10 ⁻³				CD	24.7	95% EtOH (anion = ClO ₄ ⁻)	985
		Ba ²⁺					CD	25	MeCN	976

^a Generally, the H^{\ddagger} and S^{\ddagger} values are calculated from k_f data. In those cases where these values are based on k_d values, a d is placed in parentheses following the value. ^b Methods: see footnote b in Table I. ^c Conditions: for solvents, see footnote c in Table I. Equations: $k_d = k + k_H[H^+]$ or $k_d = k + k_{HA}[HA]$ where k_d = observed dissociation constant, k = uncatalyzed dissociation constant, k_H = acid catalyzed dissociation constant, k_{HA} = general acid catalyzed dissociation constant. $k_d = k_H$ means that in the Table k_d stands for k_H (acid catalyzed) and $k_d = k$ means that in the Table k_d stands for k (uncatalyzed). Eigen-Winkler complexation mechanism:



where M^+ = solvated metal ion, L = macrocyclic ligand, $M^+ \dots L$ solvent-separated metal-macrocyclic ligand pair, M^+L = contact pair, $(ML)^+$ = final complex with the metal cation embedded in the macrocyclic cavity. Decomplexation mechanisms:



^d Amino acid abbreviations and names are given in Nomenclature for Charts.

TABLE VI. Kinetic Parameters for Anion-Macrocycle Interaction in Solution

ligand	anion	$k_f, M^{-1}s^{-1}$	k_d, s^{-1}	$\Delta H^\ddagger,^a$ kJ/mol	$\Delta S^\ddagger,^a$ J/K·mol	method ^b	$T, ^\circ C$	conditions ^c	ref
CHART LV									
(1,4-B) ₄ A ₄ 28C ₄ -2	1-HO-2-(COO ⁻)Nap	4.4x10 ⁻⁷	3.83x10 ⁻⁴			TJ	27	1/15 M phosphate buffer, 0.1 M KCl, pH 7.0 (cation = Na ⁺)	1056
	2-HO-3-(COO ⁻)Nap	1.77x10 ⁻⁷	1.56x10 ⁻⁴			TJ	27	1/15 M phosphate buffer, 0.1 M KCl, pH 7.0 (cation = Na ⁺)	1056
CHART LXXIV									
Sn ₂ [C ₆ .C ₆ .C ₆]-1	F ⁻		<100			NMR	30	CDCl ₃	1082
	Cl ⁻	4.9x10 ²	6.5x10 ²			NMR	-60	CDCl ₃	1081
Sn ₂ [C ₇ .C ₇ .C ₇]-1	Cl ⁻	8.1x10 ²	1.6x10 ³			NMR	-50	CDCl ₃	1081
	Cl ⁻	1.6x10 ³	4.4x10 ³			NMR	-40	CDCl ₃	1081
Sn ₂ [C ₈ .C ₈ .C ₈]-1	Cl ⁻	6.1x10 ⁴	2.1x10 ⁵	29.7		NMR	20	CDCl ₃	1081
				36.8(d)					1081
	Cl ⁻	8.1x10 ⁴	4.0x10 ⁵			NMR	35	CDCl ₃	1081
	Cl ⁻	1.0x10 ⁵	7.8x10 ⁵			NMR	50	CDCl ₃	1081
	Cl ⁻	9x10 ³	2.0x10 ²			NMR	-50	CDCl ₃	1081, 1083
	Cl ⁻	2x10 ⁴	3.6x10 ²			NMR	-40	CDCl ₃	1081, 1083
	Cl ⁻	3.7x10 ⁴	8.4x10 ²			NMR	-20	CDCl ₃	1081, 1083
	Cl ⁻	7x10 ⁴	2.0x10 ³			NMR	-30	CDCl ₃	1081, 1083
	Cl ⁻	1x10 ⁵	4x10 ³			NMR	-20	CDCl ₃	1081, 1083
	Cl ⁻	4x10 ⁵	2.3x10 ⁴	29.7		NMR	20	CDCl ₃	1081
Sn ₂ [C ₁₀ .C ₁₀ .C ₁₀]-1	Cl ⁻	2.5x10 ⁴	1.8x10 ³			NMR	-10	CDCl ₂ CDCl ₂	1081
	Cl ⁻	2.3x10 ⁵	1.5x10 ⁴	20.9		NMR	20	CDCl ₂ CDCl ₂	1081
				46.0(d)					1081
	Cl ⁻	2x10 ⁵	2.5x10 ⁴			NMR	30	CDCl ₂ CDCl ₂	1081
	Cl ⁻	5.1x10 ⁵	1.0x10 ⁵			NMR	50	CDCl ₂ CDCl ₂	1081
	Cl ⁻	8.4x10 ⁵	2.4x10 ⁵			NMR	70	CDCl ₂ CDCl ₂	1081
	Cl ⁻	1.3x10 ⁶	5.7x10 ⁵			NMR	90	CDCl ₂ CDCl ₂	1081
	Cl ⁻	5x10 ⁵	5.2x10 ³			NMR	-50	CDCl ₃	1081
	Cl ⁻	7x10 ⁵	9.3x10 ³			NMR	-40	CDCl ₃	1081
	Cl ⁻	8x10 ⁵	2.1x10 ⁴			NMR	-30	CDCl ₃	1081
Sn ₂ [C ₁₂ .C ₁₂ .C ₁₂]-1	Cl ⁻	1.0x10 ⁶	6.0x10 ⁴			NMR	-20	CDCl ₃	1081
	Cl ⁻	1x10 ⁶	3x10 ⁴			NMR	-20	CDCl ₃	1083
	Cl ⁻	2.6x10 ⁶	1.6x10 ⁵			NMR	0	CDCl ₃	1081
	Cl ⁻	3.5x10 ⁶	3.9x10 ⁵	16.3		NMR	20	CDCl ₃	1081
				33.5(d)					1081
	Cl ⁻	7.5x10 ⁶	1.1x10 ⁶			NMR	50	CDCl ₃	1081
	Cl ⁻		2.7x10 ⁴			NMR	-60	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081
	Cl ⁻		7.8x10 ⁴			NMR	-40	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081
	Cl ⁻	2.2x10 ⁷	2.0x10 ⁵			NMR	-20	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081
	Cl ⁻	2.6x10 ⁷	4.7x10 ⁵			NMR	0	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081
Sn ₂ [C ₁₂ .C ₁₂ .C ₁₂]-2	Cl ⁻	3.4x10 ⁷	9.7x10 ⁵	6.7		NMR	20	CH ₂ Cl ₂ with 10% C ₆ D ₆	1081
				23.4(d)					1081
	Cl ⁻		5-10x10 ⁴			NMR	-50	CDCl ₃	1081
	Cl ⁻	3x10 ⁵	6x10 ⁴			NMR	-50	CDCl ₃	1083
	Cl ⁻	2.6x10 ⁶	3x10 ⁵			NMR	-20	CDCl ₃	1081
	Cl ⁻	2x10 ⁶	3x10 ⁵			NMR	-20	CDCl ₃	1083
	Cl ⁻	1.0x10 ⁷	2.5x10 ⁶	~24.7		NMR	20	CDCl ₃	1081
				~32.6(d)					1081
	Cl ⁻	1x10 ⁷	3x10 ⁶			NMR	20	CDCl ₃	1083
	Sn ₂ [C ₁₂ .C ₁₂ .C ₁₂]-2	Br ⁻	7.3x10 ⁵	2.9x10 ⁵			NMR	-50	CDCl ₃
Br ⁻		2.7x10 ⁶	3.7x10 ⁶	10.5		NMR	20	CDCl ₃	1081
				19.2(d)					1081
Br ⁻		3.1x10 ⁶	4.3x10 ⁶			NMR	25	CDCl ₃	1081
	Br ⁻	4.1x10 ⁶	7.1±10 ⁶			NMR	50	CDCl ₃	1081

^{a-c} See corresponding footnotes for Table V.

VIII. References

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