Additions and Corrections

Coordination Chemistry of Microbial Iron Transport. 42. Structural and Spectroscopic Characterization of Diastereomeric Cr(III) and Co(III) Complexes of Desferriferrithiocin [*J. Am. Chem. Soc.* **1990**, *112*, 1854–1860]. F. EKKEHARDT HAHN, THOMAS J. MCMURRY, ALAIN HUGI, and KENNETH N. RAYMOND*

The positional and thermal parameters for compound **3** given in the supplementary material were incorrect. Corrected coordinates are given in this supplementary material

We also note two serious labeling errors in the paper. The **A** and **C** isomer designations are reversed in Figure 6 and in the sketch on p 1859.

Supplementary Material Available: Copies of the correct positional and thermal coordinates (2 pages). Ordering information is given on any current masthead page.

Novel Pentacoordinate Anionic Silicate, [*o*-$C_6H_4(SiPhF_2)_2F]^-$, K^+·18-Crown-6, Containing a Bent Fluoride Bridge between Two Silicon Atoms [*J. Am. Chem. Soc.* **1990**, *112*, 2422–2424]. KOHEI TAMAO,* TAKASHI HAYASHI, YOSHIHIKO ITO,* and MOTOO SHIRO

The supplementary material described below was not included in the microfiche for the March 14 issue.

Supplementary Material Available: Synthesis, physical constants, and spectral and analytical data on compounds **1**, **3**, and **4**, ^1H, ^{13}C, ^{19}F, and ^{29}Si NMR spectra at room temperature and temperature-dependent ^{19}F NMR spectra of **1**, and tables of crystallographic data, atomic coordinates, bond lengths and angles, and anisotropic thermal parameters for **1** (14 pages). Ordering information is given on any current masthead page.

LabSolutions [*J. Am. Chem. Soc.* **1990**, *112*, 2844]. LOUIS G. DAIGNAULT and RANDY SHAVER

The vendor address should be as follows: The Center for Science Support, Inc., PO Box 2725, Cambridge, MA 02238.

Book Reviews

Reactions of Coordinated Ligands: Volume 2. Edited by Paul S. Braterman (University of North Texas). Plenum: New York and London. 1989. viii + 414 pp. $95.00. ISBN 0-306-43094-0.

This is the second and final volume of Reactions of Coordinated Ligands. Whereas the first volume, published in 1986, covered organic groups or molecules coordinated to metal centers, this volume considers ligands bound through non-carbon atoms, with the exception of CO_2, which can be bound by carbon as well as oxygen. This volume is considerably shorter than the first, which contained 1052 pages. The book contains five chapters, each of which concentrates on a particular ligand or type of ligand: 1, Reactions of Coordinated Carbon Dioxide, by J. D. Miller; 2, Reactions of Coordinated Dinitrogen and Related Species, by M. Hidai and Y. Mizobe; 3, Reactions of Nitrosyls, by Frank Bottomley; 4, Hydrolysis and Condensation Reactions of O- and N-Bound Ligands, by Robert W. Hay; 5, Reactions of Coordinated Phosphorus and Sulfur Ligands, by D. M. A. Minahan, W. E. Hill, and C. A. McAuliffe.

As can be seen from the above table of contents, the book covers a broad spectrum of interests and is not the type that will be read in its entirety by most individual researchers working in one of the several fields covered by the book. However, it will be a valuable reference source for anyone in the general area of coordinated ligands. Since the book covers so much material in a limited amount of space, it does not lend itself to rapid reading. Also, the fact that the book consists of directly produced double-spaced word-processed manuscripts does not enhance the readability. The number of typographical errors is not excessive, although perhaps more frequent than usual. The most common error was to omit the Greek letters, which were written in by hand. This error was even made in the Preface.

The first chapter, on coordinated CO_2, is one of the shortest chapters with 52 pages. After an introduction covering CO_2 in nature, the properties of CO_2 are outlined followed by a discussion of the structures of CO_2 complexes. Finally, the reactions of coordinated CO_2 are reviewed. These reactions are divided in those where discrete CO_2-containing species are observed and those where such species are believed to be present but have not been observed. The reactions include oxidation, disproportionation, C–O bond cleavage and formation, formato complexes, *N*,*N*-dialkylcarbamates, and C–C bond forming reactions. There are 140 references. The most recent, except for one "in press" by the author, is 1983. There are certainly more current and comprehensive reviews available, but they would not suit this type of book. The chapter serves as a very readable introduction to the area.

The second chapter considers dinitrogen and related species. Initial

sections cover preparation, bonding modes, and charge distribution in these complexes. There is a detailed and informative discussion of the structures of various dinitrogen complexes. Naturally the formation of ammonia and hydrazine from the complexes of various transition metals is considered in some detail and, to this nonexpert at least, appears to be quite complete. Next, nitrogen–carbon bond formation is discussed followed by a section on more recent results. The chapter is 62 pages long with 202 references, the latest of which is 1986. However, most of the references since 1981 appear in a section called More Recent Results. This reviewer found the coverage about right to hold his interest.

The third chapter, which covers the reactions of nitrosyls, is one of the longer in the book with 108 pages. The references total 518 and the latest was published in 1985. To make the review manageable, it is confined to reactions in solution, since there is a considerable literature on reactions of NO on surfaces. After an informative historical introduction, the reactions of the nitroprusside ion and related pentacyanonitrosyls are considered. These reactions include reaction with nucleophiles and reduction. Next, the reduction of nitrosyls and their reactions with nucleophiles and electrophiles in general is reviewed. Other topics include the formation of carbon–nitrogen bonds; coupling, dimerization, and disproportionation of nitrogen dioxide in nitrosyl complexes; and exchange, substitution, and transfer of the nitrosyl ligand. The chapter concludes with a discussion of miscellaneous reactions of nitrosyls. Although this chapter contains a lot of information, it is written in a very clear and easy-to-read fashion.

The fourth chapter, on hydrolysis and condensation reactions of O- and N-bonded ligands, is the longest in the book with 142 pages and 543 references, the most recent of which was published in 1986, although a manuscript in preparation is cited. As with Chapter 2, practically all the refrences since 1980 are in a Recent Results section. A large part of the chapter is spent on the hydrolysis of amino acid esters and amides. After a short consideration of the uncatalyzed reactions, the metal-catalyzed reactions are treated. Rates of the catalyzed reactions are constantly being compared with uncatalyzed rates to obtain rate enhancements. After a brief treatment of metal-catalyzed condensation reactions of amino acids, the hydrolysis of a number of groups including carboxylic esters and amides, nitriles, phosphate esters, sulfate esters, epoxides, glycosides, acetals, anhydrides, and imines are discussed. The review ends with sections on polymer–metal complexes and recent developments. There is so much information in this chapter that the author treats much of the data in a superficial fashion, listing reactions in a total of 22 tables and 20 schemes. This made for very slow reading. However, at times, the author does discuss possible mechanisms, systems where more study is needed, and potential uses of some systems.

The final chapter considers reactions of coordinated phosphorus and sulfur ligands. With 35 pages it is the shortest chapter and contains 150 references, the latest of which was published in 1980. After a brief introduction pointing out a number of review articles and books that provide a general background to the chapter, the authors consider the reactions of phosphorus and related ligands. Most of this section is devoted to the cyclometalation reaction followed by shorter sections on alkenyl and alkynyl reactions, oxo transfer reactions, and finally miscellaneous reactions of coordinated Group V ligands. The second part of the chapter is on reactions of sulfur ligands. As cyclometalation is of little importance with sulfur-donor ligands, this section is very short, as are sections on carbon disulfide activation, disulfur reactions, and disulfide cleavage. Longer treatments include S-dealkylation and S-alkylation, thiocarbonyl reactions, sulfur-assisted electron-transfer reactions, trans effect, oxidation of coordinated sulfur, and reactions involving dithiocarbamates, xanthates, and dithiophosphates. The treatment is cursory and the chapter needs a "recent results section" to bring it up to date.

The advantage of a book such as this is that it puts a large volume of related chemistry in one place for easy reference. However, the logistics of organizing such a book causes the timeliness to suffer, and this is a serious defect of the book. Certainly there are reviews in the areas that contain more recent literature.

As a rather complete reference book in a broad field of chemistry, this book should probably be on the shelves of almost every library. It should be on the shelves of chemists who have a interest in the general area of coordinated ligands or at least two of the subject areas of the individual chapters. Those who want a treatment of any of the topics which is as current as possible are best served by consulting a recent review.

The abbreviations used in the book are defined in a 3-page list at the end of the book, and there is a subject index.

Patrick M. Henry, *Loyola University of Chicago*

Catalysis on Zeolites. Edited by D. Kalló (Central Research Institute for Chemistry, Hungarian Academy of Sciences) and Kh. M. Minachev (N. D. Zelinsky Institute of Organic Chemistry, USSR Academy of Sciences). Akadémiai Kiadó: Budapest. 1988. xi + 583 pp. $58.00. ISBN 963-05-4959-X.

This book in English is a unique collection of monographs on zeolite catalysis written by the experts of institutions in east European countries. It is a result of collaborative work by the members of the international council from Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, and the Soviet Union. The book is not only a comprehensive compilation of the accomplishments made by the researchers of these countries, but it also contains numerous insightful observations and useful suggestions for future studies.

There are 17 chapters, each with a reference section which covers publications up to 1986. The extensive subject index reflects careful selection of topic headings. The following is a list of brief descriptions for each chapter.

Chapter 1 (Beran): A survey of quantum chemical approach including cluster models with specific examples of calculations on the electronic properties. Chapter 2 (Shpiro, Antoshin, and Minachev): An extensive review of surface sensitive techniques with emphasis on XPS, AES, and SIMS. Chapter 3 (Dimitrov and Bezouhanova): IR, UV, and NMR spectroscopies of adsorbed hydrocarbons. Chapter 4 (Baranski and Ceckiewicz): Application of TPD methods. Chapter 5 (Dimitrov, Popova, Mladenov, Steinberg, and Siegel): A survey of analysis by thermal methods with 195 references. Chapter 6 (Bosácek and Patzelová): Stabilization of Y zeolites. Chapter 7 (Mostowicz and Berak): Morphology of pentasil zeolites. Chapter 8 (Fejes, Kiricsi, Hannus, and Schöbel): Tailoring of zeolites by dealumination. Chapter 9 (Mishin, Bremer, and Wendlandt): Preparation and catalytic properties of silica-rich H-moldenites. Combination of thermal and acid treatments. Chapter 10 (Romanowski and Jabloński): Effects of exchange of zeolite lattice with transition metal cations (nickel, cobalt, iron). Chapter 11 (Wichterlová, Kubelková, and Nováková): A thorough review on localized states and their effects of aluminum, iron, and chromium. Chapter 12 (Davidova): Activity, selectivity, and stability of nickel zeolites. Chapter 13 (Kalló, Papp, and Detreköy): Characterization and catalytic properties of clinoptilolites. Chapter 14 (Wendlandt and Bremer): Validity of the principle of hard and soft acids and bases applied to aluminosilicates. Chapter 15 (Datka): Various stages of olefin transformations in relation to zeolite acidity. Chapter 16 (Minachev, Kharlamov, and Garanin): Hydrogenation over cationic forms of zeolites. Chapter 17 (Becker, John, Steinberg, Weber, and Nestler): Developments of industrial zeolites in the GDR.

Shinichi Ichikawa, *Hitachi, Ltd.*

Spectroscopy with Polarized Light. Solute Alignment by Photoselection, in Liquid Crystals, Polymers, and Membranes. By J. Michl (University of Utah) and E. W. Thulstrup (Royal Danish School of Educational Studies). VCH: New York and Weinheim. 1986. xvi + 573 pp. $138.00. ISBN 0-89573-346-3.

Much of what we know about molecular electronic structure has been deduced from experiments where macroscopic samples interact with light. When a known anisotropy is introduced into the light, the sample, or both, the information content of these experiments increases. This book gives a comprehensive description of spectroscopy with polarized light on samples with varying degrees of anisotropy—liquid crystals, polymers, and membranes. Aimed at an audience of graduate students and researchers who are familiar with elementary quantum mechanics, optics, and spectroscopy, it seeks to provide a conceptual as well as a theoretical framework for understanding dichroism in electronic and vibrational spectroscopy.

Background chapters on spectroscopy and the quantum mechanics of transition moments are followed by two chapters that review experimental techniques used to prepare solutions of partially aligned solutes and give a formalism for quantitatively describing the resulting anisotropy. These are followed by three chapters discussing linear dichroism, natural and magnetic optical activity, and the more complex phenomena of photoluminescence, photodichroism, two-photon absorption, and Raman scattering. A final chapter summarizes experiments.

The authors aim at encyclopedic and rigorous coverage interwoven with qualitative pictures for those whose mathematical or spectroscopic background may be weak. They are, in the main, successful. The attempt to provide all of the relevant spectroscopic and quantum mechanical background in a single volume generates some extremely compressed chapters with a high density of formulae (for example, there are 143 formulae in Chapter 1). While these are subject to error as well as to misuse by the uncritical reader, the thoughtful presentation of references at the end of each chapter should guard against this. Criticisms could be raised (for example, why dismiss saturation on the grounds of low light intensity and then go on to consider two-photon absorption?), but they are minor. This book will be welcomed by all interested in spectroscopy in partially oriented solutions.

Bryan E. Kohler, *University of California—Riverside*