Additions and Corrections

Syntheses and Optical Resolution of Calix[4]arenes with Molecular Asymmetry. Systematic Classification of All Possible Chiral Isomers Derivable from Calix[4]arene [*J. Am. Chem. Soc.* **1993**, *115*, 3997]. KOJI IWAMOTO, HIROYASU SHIMIZU, KOJI ARAKI, AND SEIJI SHINKAI*

Page 3999–4000: In Tables I–III, the numbers of products are not counted correctly. If regioisomers arising from the arrangement order of different substituents are not counted, the following *O*-alkylation products should be deleted: that is, $A^{\alpha}B^{\beta}A^{\alpha}B^{\alpha}$, $A^{\alpha}A^{\alpha}B^{\alpha}B^{\beta}$, $A^{\alpha}A^{\beta}B^{\alpha}C^{\alpha}$, $A^{\alpha}A^{\alpha}B^{\alpha}C^{\beta}$, $A^{\alpha}B^{\alpha}A^{\alpha}C^{\beta}$, $A^{\alpha}B^{\beta}C^{\alpha}D^{\alpha}$, $A^{\alpha}B^{\alpha}C^{\beta}D^{\alpha}$, $A^{\alpha}B^{\alpha}C^{\alpha}D^{\beta}$, and $A^{\beta}B^{\alpha}C^{\alpha}D^{\beta}$ in Table I, $A^{\alpha}B^{\alpha}C^{\beta}H^{\alpha}$ and $A^{\beta}B^{\alpha}C^{\alpha}H^{\beta}$ in Table II, and $A^{\alpha}B^{\alpha}H^{\beta}H^{\alpha}$, $A^{\beta}B^{\alpha}H^{\alpha}H^{\alpha}$, and $A^{\beta}H^{\alpha}B^{\alpha}H^{\alpha}$ in Table III. The asterisk should be given to $A^{\beta}A^{\alpha}B^{\alpha}B^{\alpha}$ in Table I and $A^{\beta}A^{\alpha}A^{\alpha}H^{\alpha}$ in Table II.

Book Reviews *

Nuclear Magnetic Resonance. Volume 21. Specialist Periodical Report. Edited by G. A. Webb (University of Surrey). Royal Society of Chemistry: London. 1992. xxii + 594 pp. £145.00. ISBN 0-85186-442-2.

Volume 21 follows the familiar pattern for this series. The period covered is from June 1990 to May 1991. Each chapter is a separate review written by a different author. As is often the case with camera-ready publications, the font, style, and notation vary considerably from article to article. The division of the subject matter is somewhat arbitrary, focusing mainly upon applications rather than techniques, and there is no specific chapter on data processing. The book does contain a listing of NMR books and reviews as well as a comprehensive author index. However, it might benefit from a chapter summarizing the highlights of the year.

Theoretical aspects of nuclear shielding and spin–spin coupling are reviewed by Jameson and Fukui, respectively, while the applications of these parameters are reviewed by Gerothanassis and Kamienska-Trela, respectively; despite incremental progress, there seems to be little significant advance in any of these areas. Continuing this theme, Weingartner, in his review of relaxation, states, "The period under review has seen much continuing activity...but it is notable more for further development...than for complete innovation."

The coverage of solid-state NMR is divided among chapters 7, 9, 10, and 15. Chapter 7, by Groombridge, concentrates on crystalline chemical substances and experimental techniques, while the reviews of natural and synthetic macromolecules, by Parkes and Fawcett, respectively, combine both solid- and solution-state results. Chapter 8, entitled Multiple Pulse NMR contains results from the solution-state only. This is followed by a short review of conformational analysis by C. Jones and a much longer one on NMR of living systems by P. G. Morris. The book is brought to a close by reviews of imaging (MRI) by S. C. R. Williams, oriented molecules by Khetrapal, and heterogeneous systems by Halstead.

The book is a useful guide to the literature, despite the fact there is little critical comment. In many cases the reviews consist of a list of topics with corresponding references. Unfortunately, the price is almost prohibitive for individual purchase.

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Activity Coefficients in Electrolyte Solutions. 2nd Edition. Edited by Kenneth S. Pitzer (University of California at Berkeley). CRC Press: Boca Raton, FL. 1991. x + 542 pp. $195.00. ISBN 0-8493-5415-3.

This is a very valuable reference book for anyone interested in chemical reactions involving aqueous electrolyte solutions (geochemists, environmental chemists, chemical engineers, etc.). The book is also a very useful introduction to some of the modern methods of predicting the equilibrium properties of aqueous mixtures with other phases. Recent work is well covered up to the date of publication (1991). There is very little coverage of nonaqueous electrolyte solutions. Measurements and estimations of standard state properties of aqueous species are outside the scope of this book, although predictions of equilibria require both activity coefficients and standard state properties. Some standard state properties are given in Chapter 7.

The introduction by Prof. Pitzer gives a very nice and concise summary of the early developments in electrolyte solutions. The first chapter by R. H. Stokes gives a short concise statement of the thermodynamic relationships and conventions necessary for calculations in this field. The second chapter by R. M. Mazo and C. Y. Mou gives an introduction to the statistical mechanical theory of aqueous electrolyte solutions. This chapter is, of course, too short for any serious student of the theory of electrolytes, but it does provide a good introduction and appropriate references. Chapter 3 by K. S. Pitzer is a clear, concise discussion of the advantages and limitations of his ion interaction model, together with the necessary equations and a large number of parameters derived from experimental data. Equations for Pitzer and Simonsen's Margules expansion model are given in an appendix. Chapter 4 by J. N. Butler and R. Roy is a very useful symmetry of potentiometric methods, and Chapter 5 by J. A. Rard and R. F. Platford is an excellent and detailed review of the isopiestic technique with a large amount of very useful and practical advice. This chapter is highly recommended for anyone thinking of making this kind of measurement. Chapter 6 by S. L. Clegg and M. Whitfield is a survey of literature calculations of the activities in natural water, mainly at temperatures up to 100 °C. A large amount of literature is covered, and the references are very valuable to anyone interested in this field. Chapter 7 by R. T. Pabalan and K. S. Pitzer on mineral solubility has the objective of demonstrating the successful use of Pitzer's molality based ion interaction equations and his Margules expansion models for calculations of solubility equilibria on a wide variety of chemical systems which are of geochemical or industrial interest at temperatures up to 350 °C. This chapter succeeds admirably in this demonstration. Chapter 8 on ion association at high temperatures and pressures by R. E. Mesmer, D. A. Palmer, and J. M. Simonson is a very thorough review of ion association at higher temperatures and pressures. It does not cover ion association measurements near room temperature, but these are well covered elsewhere. The references are up to date (1991), and this chapter is an excellent sourcebook for anyone interested in association reactions in aqueous solutions at high temperatures and pressures.

The use of Pitzer's ion interaction model to correlate and predict the properties of aqueous solutions in natural waters and mineral solubilities is particularly well covered. However, the book does not attempt to cover all possible approaches, so the serious student would want to consult other references. *The Handbook of Aqueous Electrolyte Thermodynamics*, DIPPR, New York, 1985, by J. F. Zemaitis, D. M. Clark, M. Raffal, and N. C. Scrivner is of particular interest in chemical engineering applications. Geochemists working with reactions in aqueous solutions above 300 °C will be interested in the predictions of standard state

*Unsigned book reviews are by the Book Review Editor.