Additions and Corrections

Vicinal ^{113}Cd,^{1}H$^{\beta}$-Cysteine Coupling in Cd-Substituted Metalloproteins Follows a Karplus-Type Dependence [*J. Am. Chem. Soc.* **1994**, *116*, 377–378]. OLIVER ZERBE, DEAN L. POUNTNEY, WOLFGANG VON PHILIPSBORN, AND MILAN VAŠÁK*

Page 377, Figure 1 legend: The Karplus-type relationship should be $^{3}J(\mathrm{Hz}) = c(\cos^2 \phi) - b(\cos \phi) - a$, where $c = 36$, $b = 13$, and $a = -1$.

Handbook of Industrial Surfactants [*J. Am. Chem. Soc.* **1994**, *116*, 822]. REVIEWED BY ROYSTON ROBERTS

The publisher of this handbook should be listed as Gower: Brookfield, Vermont.

Theoretical Analyses of the Tautomeric and Conformational Equilibria of Histamine and ($\alpha R,\beta S$)-α,β-Dimethylhistamine in the Gas Phase and Aqueous Solution [*J. Am. Chem. Soc.* **1994**, *116*, 4898–4909]. PETER I. NAGY,* GRAHAM J. DURANT, WAYNE P. HOSS, AND DOUGLAS A. SMITH*

Note Added in Proof: In a recent paper, Worth and Richards[1] found the t3H+ isomer as the dominant structure for the histamine monocation in solution. This difference from our conclusions is attributed to the use of the AMBER force field in the solution simulations. AMBER has been found to underestimate the t3H+ internal energy relative to g3H+ when compared to high-level ab initio calculations[2] and thus too great a weight is given to the solvation term in favor of the trans form.

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(1) Worth, G. A.; Richards, W. G. *J. Am. Chem. Soc.* **1994**, *116*, 239.

(2) Nagy, P. I.; Bitar, J. E.; Smith, D. A. *J. Comput. Chem.* In press.

Double-Exchange and Vibronic Coupling in Mixed-Valence Systems. Electronic Structure of $[Fe_4S_4]^{3+}$ Clusters in High-Potential Iron Protein and Related Models [*J. Am. Chem. Soc.* **1994**, *116*, 5362–5372]. EMILE L. BOMINAAR, SERGUEÏ A. BORSHCH,* AND JEAN-JACQUES GIRERD*

The following references to the NMR work on HiPIP's should have been included: Banci, L.; Bertini, I.; Capozzi, F.; Carloni, P.; Ciurli, S.; Luchinat, C.; Piccioli, M. *J. Am. Chem. Soc.* **1993**, *115*, 3431–3440; Banci, L.; Bertini, I.; Ciurli, S.; Ferretti, S.; Luchinat, C.; Piccioli, M. *Biochemistry* **1993**, *32*, 9387–9397.

A general reference on NMR studies of iron sulfur proteins is the following: Bertini, I.; Ciurli, S.; Luchinat, C. *Angew. Chem.* **1994**, in press.

Book Reviews

Multiple Bonds Between Metal Atoms. Second Edition. By F. Albert Cotton (Texas A&M University) and Richard A. Walton (Purdue University). Oxford University Press: New York. 1993. xxii + 787 pp. $95.00. ISBN 0-19-855649-7.

This book is a comprehensive treatise of dinuclear metal–metal bond literature prior to 1990 with selected results from 1991–1992 included in a postscript chapter. Admirably, this second edition is not merely a factual revision of the first book but rather a completely reorganized text that reflects the evolution of the metal–metal bond field since the first edition appeared in 1981. As in the first editor, the writing style is concise, interesting, and informative. Sections of the introductory chapter have been rewritten, but the authors wisely chose to include most of the earlier edition's historical overview, which is critical reading for those who plan to enter the field or for those who are interested in fundamental principles of multiply bonded compounds. An important and welcome change is the primary organization of six of the eleven chapters by element rather than metal–metal bond order, which is much more convenient for locating specific compounds. Chapter 5, devoted to triply bonded compounds of the type M_2X_6, is similar to Chapter 5 in the first edition and is particularly well-done. Chapter 9 on metal–metal bonds in other structural contexts including tri-, tetra-, and hexanuclear clusters, organometallic compounds, and bioctahedra of the edge- and face-sharing varieties is a useful addition. Structural correlations, thermodynamics, and spectroscopic properties of multiply bonded compounds are detailed in Chapter 10, which superficially resembles Chapter 8 in the first edition but is a more detailed account of current theories regarding the solid-state and solution behavior of M–M-bonded compounds. Sections on the intriguing rotational disorder problem found in the packing of quadruply bonded compounds in the crystalline state and the theory of internal flips of the M–M unit have been added to the structural discussion in Chapter 10. Throughout the book, the authors provide useful tables of compounds arranged according to bond order and ligand type, and there are ample illustrations, equations, and figures to guide the reader. Acronyms for ligands are defined in footnotes to the tables and in the text. Literature references are current and comprehensive, and the index is very well-done.

By providing this timely revision of their first book, which covered the first two decades of the field, the authors have once again succeeded in producing a useful reference book and an excellent special topics teaching text. This book fills a void in the textbooks of inorganic chemistry, as the compounds described in this monograph are not treated in much detail in any major book dedicated to coordination or organometallic chemistry. The vast nature of the field involving metal–metal bonds between transition elements and its promise for continued expansion are evident from the size of this book, which is approximately 300 pages longer than the first edition. It belongs on the bookshelves of all chemists interested in the synthesis, spectroscopy, and structures of transition metal compounds.

Kim R. Dunbar, *Michigan State University*

Catalytic Asymmetric Synthesis. Edited by Iwao Ojima (State University of New York at Stony Brook). VCH: New York. 1993. 476 pp. $110.00. ISBN 1-56081-532-9.

The development of simple chiral transition metal complexes that catalyze synthetic transformations and produce molecules of high enantiomeric purity is rapidly becoming one of the most prolific areas of research in organic chemistry. This book provides the reader with a detailed account of the most significant advances in catalytic asymmetric synthesis and many excellent lead references.

There are nine chapters dealing with a variety of reactions effected by asymmetric catalysis: Asymmetric Hydrogenation, by H. Takaya, T. Ohta, and R. Noyori; Asymmetric Isomerization of Allylamines, by S. Akutagawa and K. Tani; Asymmetric Cyclopropanation, by M. P. Doyle; Asymmetric Oxidation (Catalytic Asymmetric Epoxidation of Allylic Alcohols, by R. A. Johnson and K. B. Sharpless; Asymmetric Catalytic Epoxidation of Unfunctionalised Olefins, by E. N. Jacobson; Asymmetric Oxidation of Sulfides, by H. B. Kagan; Catalytic Asymmetric Dihydroxylation, by R. A. Johnson and K. B. Sharpless); Asymmetric Carbonylation, by G. Consiglio; Asymmetric Hydrosilation, by H. Brunner, H. Nishiyama, and K. Itoh; Asymmetric Carbon–Carbon Bond Forming Reactions (Asymmetric Allylic Substitution and Grignard Cross Coupling, by T. Hayashi, Asymmetric Aldol Reactions, by M. Sawamura and Y. Ito); Asymmetric Phase Transfer Reactions, by M. J. O'Donnell; Asymmetric Reactions with Chiral Lewis Acid Catalysts, by K. Maruoka and H. Yamamoto. There is also an appendix listing all the catalysts discussed.

The highlight of this book is the chapter on oxidations, which has two outstanding contributions by Sharpless and one by Jacobson on asymmetric C–O bond formation. Their standards of excellence will no doubt provide the bench mark for comparative work for many years.

However, this book is not without flaws. One major criticism is that illustrations of catalysts are at the beginning of most chapters and thus they do not appear with the relevant text. There are also a number of examples of reactions being discussed without a schematic representation.

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