

## Additions and Corrections

**Preparation of *tert*-Butyl-Capped Polyenes Containing up to 15 Double Bonds** [*J. Am. Chem. Soc.* 1989, 111, 7989]. KONRAD KNOLL and RICHARD R. SCHROCK\*

Page 7996: In Table II, row 6t<sub>6</sub> should read, in column 4, 131.12 (6.18); in column 5, 132.37 (6.21); in column 6, 132.91 (6.22).

## Book Reviews\*

**Chromatography/Fourier Transform Infrared Spectroscopy and Its Applications.** By Robert White (University of Oklahoma). Marcel Dekker: New York and Basel, 1990. vi + 344 pp. \$99.75. ISBN 0-8247-8191-0.

By simply noting the title of this book the first question that might come to mind is: Does the world need another book on the interface of chromatography to Fourier transform infrared (FTIR) spectroscopy? This reviewer believes the answer is yes, but it will best serve a select audience. This book will be a useful guide to those interested in a broad-scale introduction to chromatography/FTIR. In addition, for those who are more thoroughly versed in chromatography/FTIR, Chapter 6 remains a good description of the numerous possible applications of the technique.

The author describes Chapter 1 as an introduction of general characteristics that are common to all chromatography/FTIR interfaces. In actuality, Chapter 1 describes in a very basic way the operation of an FTIR. Next, the variables that control the performance of a typical FTIR are discussed. The criteria for chromatographic separations for column and planar chromatography are also described in an even more elementary fashion.

Chapters 2-4 describe from an historical perspective the attributes of the GC, HPLC, and TLC interfaces of FTIR. The presentation in each chapter is reasonably thorough and the information is also current.

Chapter 5, which is entitled Structure Elucidation Methods, provides a very clear description of the different algorithms that are presently used by library search routines to identify compounds. The progress on newer structure elucidation strategies such as the use of expert systems is also well described. Finally a very interesting enumeration of the causes of mismatch between matrix isolation spectra with gas-phase library spectra was discussed.

Chapter 6 is a survey of the characterization of mixtures by chromatography/Fourier transform infrared spectroscopy. In this chapter select applications are used to illustrate the advantages and disadvantages of the use of chromatography/FTIR. This is a well-written chapter with good examples of sample composition, sensitivity, and analysis time requirements.

Susan V. Olesik, *The Ohio State University*

**Iron Carriers and Iron Proteins. Physical Bioinorganic Chemistry. Volume 5.** By Thomas M. Lochr (Oregon Graduate Center). VCH Publishers, Inc.: New York, NY, 1989. xvi + 533 pp. \$150.00. ISBN 0895-73298-X.

This is an excellent book which admirably fulfills the stated goals of the senior editors, Harry B. Gray and A. B. P. Lever, in presenting a thorough and well-balanced description of iron carriers and proteins from the perspective of "bioinorganic chemistry". Iron is an element essential to most living systems. The book makes an important contribution to the literature in providing not only the scientific findings related to iron but also background on the instrumentation and techniques used to acquire these findings. The authors of the different chapters attempt to point out the strengths and weaknesses of the various approaches and to explain why, in certain cases, discrepancies exist. It is difficult to imagine a better selection of authors. The book is impressive in both scope and detail.

The first chapter by Drs. Berthold F. Matzanke, Gertraud Müller-Matzanke, and Kenneth N. Raymond contains a masterful description of siderophores: iron chelators synthesized by microorganisms to allow

iron solubilization and utilization. The variety of compounds is fascinating, if somewhat daunting to the uninitiated. Detailed descriptions of how the structures of the various chelators were determined are included, as well as mechanisms by which cells acquire the siderophores. In addition, the rationale for studying these compounds is clearly presented. This chapter is certainly the definitive treatise on the subject of siderophore mediated iron transport in the literature today.

In Chapter 2 Drs. Pauline M. Harrison and Terence H. Lilley ably summarize the data on the structure and the structure functional behavior of ferritin as elucidated by application of electron microscopy, X-ray diffraction, Mössbauer, electronic absorption, and X-ray absorption spectroscopy. There are sections on reconstitution of ferritin iron-cores, the 3-dimensional structure of apoferritin, metal-ion binding to ferritin and apoferritin, mobilization of ferritin iron, and a description of bacteroferritin. The presentation is clear and well-organized.

Chapter 3 by Drs. Daniel C. Harris and Philip Aisen contains a thorough and lucid description of the physical biochemistry of the transferrins. The chapter is especially valuable in providing balanced discussions on discrepancies which exist in the literature. Chapter 4 by Dr. Aisen reports the exciting breakthroughs in transferrin research which occurred between 1984 and 1988, namely the publication of the 3-dimensional structure of two transferrins allowing positive identification of the iron binding ligands. The author describes the successes and failures of the physical chemical techniques in predicting these ligands. Other important findings include the amino acid sequence of the human transferrin receptor and a description of the transferrin to cell cycle.

In Chapter 5, Dr. Joann Sanders-Loehr describes binuclear iron proteins, in particular those which contain iron atoms bridged by oxo groups. Included in this group are hemerythrin, ribonucleotide reductase, purple acid phosphatases, methane monooxygenase, and possibly ferritin. There is a thorough delineation of the spectral and magnetic properties of these compounds which are responsible for oxygen transport and activation.

The final chapter covers catechol dioxygenases which are succinctly reviewed by Dr. Lawrence Que, who is responsible for many of the findings. The catechol dioxygenases effect aromatic ring cleavage by insertion of dioxygen into the substrate. More information is available for intradiol dioxygenases, those that result in the generation of muconic acids, than for the other major category extradiol dioxygenous (those that result in muconic semialdehydes). The evidence for the structure and mechanism of action is clearly presented.

The book is a valuable resource to scientists at all levels of familiarity with the field of iron. The details on instrumentation and technique will be especially appreciated by anyone with a limited background in modern physical techniques.

Anne B. Mason, *University of Vermont, College of Medicine*

**Reviews of Environmental Contamination and Toxicology. Volumes 105-109.** Edited by George W. Ware. Springer-Verlag: New York, 1988 and 1989. Volume 105: 152 pp. \$37.00. ISBN 0-387-90723-0. Volume 106: 233 pp. \$45.00. ISBN 0-387-96830-X. Volume 107: 184 pp. \$38.00. ISBN 0-387-96874-1. Volume 108: 184 pp. \$42.00. ISBN 0-387-96902-0. Volume 109: 144 pp. \$49.50. ISBN 0-387-96952-7.

Volume 105 of this series of hardbound books contains reviews on toxicology and contamination of Aldicarb and Methyl Isocyanate. Volume 106 is a collection of "health advisories" from the U.S. EPA, Office of Drinking Water, on various organic contaminants ranging from benzene, *p*-dioxene, and many chlorinated hydrocarbons, to xylenes. Volume 107 contains advisories on a further group of contaminants, most of which are inorganic, such as chromium, mercury, and nitrite. Volume

\*Unsigned book reviews are by the Book Review Editor.