

Additions and Corrections

Chiral Synthesis via Organoboranes. 1. A Simple Procedure To Achieve Products of Essentially 100% Optical Purity in Hydroboration of Alkenes with Monoisopinocampheylborane. Synthesis of Boronic Esters and Derived Products of Very High Enantiomeric Purities [*J. Am. Chem. Soc.* 1984 106, 1797]. HERBERT C. BROWN* and BAKTHAN SINGARAM

Page 1798, left column, bottom: Add line— ... of 100% optical purity. Oxidation of the mother liquor gave the...

Page 1798, structure 6: Add H to the wedge bond over the benzene ring.

Reactions of Alkanediazotic Acids at Near Neutral and Basic pH in $[^{18}\text{O}]\text{H}_2\text{O}$ [*J. Am. Chem. Soc.* 1984, 106, 2072–2077]. BARRY GOLD,* ASHOK DESHPANDE, WENDY LINDER, and LANCE HINES

Page 2075, 2nd column, 14th line—the sentence should read as follows: ... thermolysis in dioxane of *N*-sec-butyl-*N*-nitroso....

Book Reviews*

Nuclear Chemistry—Theory and Applications. By G. R. Choppin (Florida State University) and J. Rydberg (Chalmers University of Technology, Sweden). Pergamon Press, New York. 1980. viii + 667 pp. \$87.00.

This appropriately titled, large book is a comprehensive textbook on nuclear and radiochemistry for use at the upper undergraduate level or introductory graduate level. The authors have succeeded in fulfilling their goal of covering a broad array of topics with adequate coverage in both depth and detail. The treatment of difficult concepts is simplified by a readable style and comparison with atomic analogies. Possible over-simplification by keeping the mathematics uncomplicated may be a possible concern for some users. The first portion of the book is devoted to the principles of nuclear chemistry, in which a blend of historical events assists in developing those ideas interestingly. The second portion is divided between topics of applications of nuclear chemistry to most areas of science including geological and cosmological settings. This section represents a particular strength of this book. The third portion, which is given in three chapters, is devoted to development of nuclear reactor theory and applications in nuclear reactors. Because nuclear technology changes so rapidly, some of the statistics used in this section may no longer be useful. The utility of this book as a reference book for non-nuclear chemists and nuclear chemists alike results both from the comprehensiveness of subject material and the integration across traditional disciplinary lines. Following each chapter are problems, with answers provided in the Appendix. Also, optional topics are marked by an asterisk in each chapter. The book contains a periodic chart, chart of the nuclides, and other pertinent appendix sections.

Moses Attrep, Jr., *East Texas State University*

Metal Ions in Biological Systems. Volume 16. Methods Involving Metal Ions and Complexes in Clinical Chemistry. Edited by Helmut Sigel (University of Basel). Marcel Dekker, New York, NY. 1983. XXV + 397 pp. \$75.00.

This 18-chapter volume containing contributions from 22 authors begins with chapters on some nutritional and immunological aspects of metal ions. These are followed by considerations of therapeutic metal-ion chelating agents which are used as antidotes for metal poisoning and to enhance pharmacological properties of metals. The major part of this book, some 10 chapters, deals with methods for the determination of metals encountered in clinical chemistry. A wide variety of analytical techniques are touched upon, and these include stable isotope dilution, neutron activation analysis, atomic absorption spectrophotometry, voltammetric methods, and a number of others. Also covered are methods

for measuring drugs in body fluids by metal-chelate formation. The book concludes with two chapters on the clinical uses of gallium, indium, and technetium radionuclides.

Because the many metal ions and complexes in their various oxidation states exhibit such varied chemistries and biochemistries, the material in this book necessarily presents an overview rather than a review of the diverse uses and determinations of metal ions and their complexes encountered in clinical chemistry. The chapters on the determinations of metal ions discuss both methods currently in use and new techniques that are gaining wider acceptance for their increased convenience, sensitivity, reliability, and accuracy. Most chapters generally include a reasonable biochemical, physiological, and clinical introduction for the use of the non-specialist. This book should be of general interest to researchers in a wide variety of disciplines and clinicians whose work involves the use of metal ions.

Brian B. Hasinoff, *Memorial University of Newfoundland*

A Treasury for Word Lovers. By Morton S. Freeman. ISI Press, Philadelphia, PA 19104. 1983. x + 333 pp. \$14.95 softbound; \$19.95 hardbound.

The more authors that read this book, the easier the job of editing journals will become. It is about choosing the right word and properly using it in writing and speech. It consists of an alphabetic collection of common words or expressions, from "A, an" (does one write "a UV spectrum" or "an UV spectrum?") to "Zoom", and for each it presents an engaging paragraph or two, explaining how the word should be used and giving examples of correct and incorrect use. Words found in almost any chemical paper, such as "due to", "marginal", "practically", "hopefully", "frequently", "case", "based on", "alternate", etc., but which are all too often used incorrectly, are explained with great clarity. In discussing when to use "reaction" and when "response", the author appropriately remarks "reaction is a term best restricted to science". An index provides access to many topics, such as "restricted clauses", that are buried in paragraphs on particular words.

Indoles. Part 4. The Monoterpenoid Indole Alkaloids. Edited by J. E. Saxton. John Wiley and Sons, New York. 1983. xii + 886 pp. \$200.00.

The monoterpenoid alkaloids are those derived from tryptophane and a monoterpenene skeletal unit, and include such important classes as the yohimba, strychnos, and cinchona alkaloids. Their importance is underscored by the fact that more than a thousand of them are known, and the task of dealing with them now requires a team of contributors. This volume consists of fourteen chapters written by eleven authors, who together have covered the subject reasonably completely. The literature has been surveyed up to mid-1981. Some of the information is presented

*Unsigned book reviews are by the Book Review Editor.

in tables, but the nature of the subject demands that most alkaloids be treated individually, using structural formulas copiously. Since so many of them are bicyclic or polycyclic, this need places a greater than usual demand on the draughtsmen and typesetters; they seem to have done their jobs well, and the complex structures are very clear.

Most of the chapters concentrate on the structure and synthesis of the alkaloids of a particular type. The first chapter, however, is a generally applicable exposition of biosynthetic relationships, and the last chapter discusses pharmacology, biochemistry, and clinical applications. The author and subject indexes show the thoroughness that is characteristic of the series.

Coal and Coal Products: Analytical Characterization Techniques. A.C.S. Symposium Series No. 205. Edited by E. L. Fuller, Jr. American Chemical Society, Washington, D.C. 1982. x + 326 pp. \$42.95 (export \$51.95).

This volume contains the expanded versions of 15 papers given at a symposium sponsored jointly by the ACS Divisions of Analytical, Fuel, and Colloid and Surface Chemistry. The subjects span the range from determination of elements to a variety of instrumental methods for determining organic constituents and coal minerals. The papers are reproduced from typescripts of rather varying quality, but they are well provided with figures, tables, and references, and there is a good subject index.

Iron Metabolism. By Iván Bernát (translated by Éva Gosztonyi). Plenum Press, New York. 1983. 415 pp. \$39.50.

This monograph is an ambitious attempt to cover the rather large topic of iron metabolism from both a biochemical and, especially, a clinical approach. The 27 chapters begin with the distribution, significance, absorption, transport, and storage of iron and move on to topics such as ferrokinetics, iron deficiency and anemia, and, finally, iron overload. Both subject and author indices are included. A total of over 2000 references are included in the individual chapter bibliographies. However, only slightly more than 15% of these references are to work published in the last 15 y. Consequently, much of the material covered in this book, although rich in historical perspective, is not really up to date. Numerous relatively recent advances in the more biochemical aspects of iron metabolism, including developments that have even made it into standard biochemistry textbooks, are simply not discussed. These limitations in the coverage of the biochemistry of iron metabolism unfortunately detract from the rather extensive presentation of the clinical aspects and makes this book much less useful than would be desirable for this important topic.

John H. Dawson, *University of South Carolina*

Treatise on Analytical Chemistry. 2nd Edition. Part I. Theory and Practice. Volume 10. Section 1. Magnetic Field and Related Methods of Analysis. Edited by P. J. Elving (University of Michigan), M. M. Bursey (University of North Carolina), and I. M. Kolthoff (Editor Emeritus, University of Minnesota). Wiley-Interscience, New York. 1983. xxvii + 533 pp.

Volume 10, Part 1, of the second edition of this important series contains six chapters on Nuclear Magnetic Resonance (NMR) techniques, Electron Spin (ESR) and Nuclear Quadrupole Resonance (NQR), Secondary Ion Mass Spectrometry (SIMS), and Mössbauer Spectrometry. The first chapter, on NMR principles and applications of proton NMR, by R. H. Cox and D. E. Leyden, includes a good theory section and a strong discussion of instrumentation, including descriptions of equipment for fourier transform-NMR and higher field units with superconducting magnet systems. The section on application of proton NMR covers the basics well and includes a good section on modern tools such as spin-tickling, INDOR, and two-dimensional FT-NMR methods. Applications to qualitative and quantitative analysis, molecular structure determination, and chemical dynamics are discussed. Chapter 2 contains coverage of the applications of ^{13}C NMR techniques by A. Lombardo and G. C. Levy. This chapter discusses FT-NMR excitation and relaxation techniques for ^{13}C analysis and spectral characteristics which are used in interpretation. Decoupling, the Nuclear Overhauser Effect, and relaxation techniques are presented. A detailed section on ^{13}C

chemical shifts is also presented. Special application to complex structures and quantitative analysis are also covered. Chapter 3 on ESR spectroscopy, by I. B. Goldberg and A. J. Bard, gives a solid introduction to a technique which is not often discussed as an analytical method. Theory, experimental techniques, and a very interesting section on analytical applications to liquids, gases, and solids are included. The fourth chapter covers NQR principles, practice, and applications, by H. G. Fitzky. This chapter gives especially good coverage to instrumentation and experimentation in the section on practice.

Chapter 5 on SIMS methods is by H. W. Werner and A. E. Morgan, and it includes an extensive background on the principles, theory, and instrumentation for dynamic SIMS and Ion microprobe and microscope applications. Missing in this section is a detailed discussion of the newer techniques of static SIMS and their relationship to other "soft" ionization techniques used in mass spectrometry: field and laser desorption, SIMS with primary atom beams (so-called FAB), etc. With respect to this concern, the section on applications glosses over much of the important work in organic or molecular static SIMS methods. A good discussion of the intercomparison of SIMS with other surface analytical methods is given, thus, the importance of SIMS as an analytical method vis-à-vis both surface analysis and mass spectrometry is only partially presented. Perhaps this chapter is out of place within this volume, and the problems with editing such a collection are mentioned in the Foreword.

The final chapter includes a good discussion of Mössbauer spectroscopy by J. G. Stevens and M. J. Ruiz. Not only are theory and instrumentation discussed in very lucid sections but an appendix on conventions and nomenclature for Mössbauer effect data is also given. This is a very desirable portion of a chapter in this type of collection.

Overall, this volume continues the important traditions of this series and provides an outstanding discussion of the analytical potentials and uses of NMR, NQR, ESR, SIMS, and Mössbauer spectroscopy. It is a must for all professional libraries, and the chapters provide especially suitable reference material for graduate course work in instrumental analysis.

Joseph A. Gardella, Jr., *State University of New York at Buffalo*

Excited States of Biopolymers. Edited by Robert F. Steiner (University of Maryland Baltimore County). Plenum Press, New York. 1983. xiii + 258 pp. \$39.50.

The primary theme of this book is a description of the use of fluorescence spectroscopic methods in the broad area of biochemistry. The book contains a very comfortable admixture of theoretical background, instrumental technique, and experimental result. I believe that this book strikes that wonderful medium of being complete enough and understandable enough for the reader inexperienced in this particular spectroscopic area and yet relevant enough for the expert. It is my judgment that the most obvious readership for this text would be biochemists who are interested in learning about a new set of experimental techniques to apply to their particular scientific problems.

The first chapter, written by Robin Hochstrasser, outlines the basic mathematical and quantum mechanical description of the fluorescence process. It is a superbly written primer which could benefit any reader; the accompanying bibliography is magnificent. In Chapter Two, Richard Haugland does an excellent job of describing the attachment of covalent fluorescence probes to biomolecules, giving a huge table of the types of probes and their spectral properties as well as an extensive section on selective modification reactions. Chapters 3 (Nanosecond Pulse Fluorimetry, by T. I. Lin and R. M. Dowben) and 4 (Fluorescence Anisotropy Decay, by the editor) are very technique oriented contributions; each contains a detailed experimental description and examples of recent results designed to promote use of the method. Chapters 5 (Fluorescence Probes of Plasma Lipoproteins, by W. Mantulin and H. Pownall) and 6 (Fluorescent Dye-Nucleic Acid Complexes, by the editor) are application oriented, describing the contributions made by fluorescence studies to the understanding of the biochemistry of these systems.

This book has a lot to recommend it, especially to scientists just getting into this area of biophysics. The clearly composed theoretical sections and the wealth of technical information ensure that this book will remain a sound reference for years to come.

Richard F. Dallinger, *Purdue University*