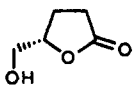
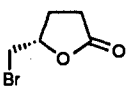
Additions and Corrections

Total Synthesis of the Cytotoxic Macrocycle (+)-Hitachimycin [*J. Am. Chem. Soc.* **1992**, *114*, 8008–8022]. AMOS B. SMITH, III,* THOMAS A. RANO, NORITAKA CHIDA, GARY A. SULIKOWSKI, AND JOHN L. WOOD

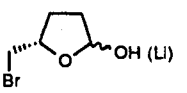
Pages 8010, 8011, 8016: Intermediates **24** and **25** were incorrectly designated as levorotatory; actually the (+) enantiomers were employed. For **25**: $[\alpha]^{25}_D$ +2.7° (*c* 0.69, $CHCl_3$). In Schemes VI, VII, VIII, and X, systematic errors occurred in the drawings of **24**, **25**, **6**, and the lithium alkoxide derived from **6**. The correct structures are given here



(+)-24



(+)-24



(+)-6

Direct Proton Transfer between HCN and Nitrogen and Oxygen Bases [*J. Am. Chem. Soc.* **1985**, *107*, 7126–7134]. RODNEY A. BEDNAR AND WILLIAM P. JENCKS*

Page 7128: Brackets should be added to eq 4 after $t_2/3$ and at the end of the equation.

Dihydrogen Complexes of Metalloporphyrins: Characterization and Catalytic Hydrogen Oxidation Activity [*J. Am. Chem. Soc.* **1992**, *114*, 5654–5664]. JAMES P. COLLMAN,* PAUL S. WAGENKNECHT, JAMES E. HUTCHISON, NATHAN S. LEWIS, MICHEL ANGEL LOPEZ, ROGER GUILARD, MAURICE L'HER, AKSEL A. BOTHNER-BY, AND P. K. MISHRA

Page 5660: Equations 12, 13, and 14 were transcribed incorrectly in the paper. They should read:

$$D_{HH} = -S_z \frac{\gamma_H{}^2 h}{2\pi^2 r_{HH}{}^3}\left(\frac{3}{2}\cos^2\theta_{HH} - \frac{1}{2}\right) \qquad (12)$$

$$\frac{{}^3/_2\cos^2\theta_{HH} - {}^1/_2}{r_{HH}{}^3} = (6.30 \times 10^{22})D_{HH} \qquad (13)$$

$$\frac{{}^3/_2\cos^2\theta_{HH} - {}^1/_2}{r_{HH}{}^3} = \pm 0.309 \times 10^{24} \qquad (14)$$

The results and conclusions reported were obtained using the correct relations and remain unchanged. We are grateful to Dr. L. Werbelow for drawing our attention to these errors.

Synthesis of 1,2-Ditellurolane Derivatives [*J. Am. Chem. Soc.* **1993**, *115*, 885]. M. V. LAKSHMIKANTHAM, MICHAEL P. CAVA,* WOLFGANG H. H. GUNTHER, PETER N. NUGARA, KENNETH A. BELMORE, JERRY L. ATWOOD, AND PETER CRAIG

Page 885: The author listed as Peter Craig was inadvertently misspelled. The correct spelling is Peter J. Cragg.

Book Reviews *

Advances in Physical Organic Chemistry. Volume 27. Edited by D. Bethell (University of Liverpool). Academic Press: New York. 1992. vi + 311 pp. $90.00. ISBN 0-12-033527-1.

This volume consists of four articles on organic reaction mechanisms and transition-state structure in solution. A. Williams (University of Kent, U.K.) discusses the development of effective charge in transition states, the experimental assessment of charge, and the interpretation of transition-state structure. I. Lee (Inha University, South Korea) reviews the use of cross-interaction terms in linear free energy relationships to probe transition-state structure in solution. C. F. Bernasconi (University of California, Santa Cruz) summarizes the principle of non-perfect synchronization and its applications to a variety of organic reactions. This extensive review provides many insights into substituent effects on transition-state structure. R. Ta-shma and Z. Rappoport (The Hebrew University of Jerusalem, Israel) review the influence of solvent on the selectivity of solvolysis reactions in aqueous alcohols and related mixtures. There is an author index and references into 1990. This volume provides a good update on modern applications of classical physical organic chemistry as it has evolved from the "Bema Hapothle" school.

K. N. Houk and Yi Li, *University of California, Los Angeles*

Chirality in Industry. The Commercial Manufacture and Applications of Optically Active Compounds. Edited by A. N. Collins, G. N. Sheldrake, and J. Crosby (ICI Specialties, U.K.). J. Wiley and Sons: New York. 1992. xvi + 410 pp. $135.00. ISBN 0-471-93595-6.

This book is an overview of the large scale production of optically active compounds from an industrial perspective. After a list of contributors and a preface by the editors, the book opens with an extensive introductory chapter by Crosby, and the remaining 20 chapters are organized under the following processing options: Non-biological Resolutions; Biological Methods; Asymmetric Synthesis by Chemical Methods; and Immobilization Techniques and Membrane Bioreactors. This book also contains a subject index.

Chemical Processing of Advanced Materials. Edited by Larry L. Hench and Jon K. West (University of Florida). J. Wiley and Sons: New York. 1992. xi + 1048 pp. $95.00. ISBN 0-471-54201-6.

This book is compiled from the Fifth Ultrastructure Processing Conference held in Orlando, FL, on February 17–21, 1991. The conference was in memoriam to Dr. Donald R. Ulrich for his lifetime leadership in this field. After a preface by the editors, the book contains 91 chapters organized under the following headings: Sol-Gel Science, Silica; Sol-Gel Science, Various Oxide and Multicomponent Systems; Sol-Gel Applications; Thin Films and Coatings; Micromorphology Science; Ultrastructural Polymers; Chemically Processed Fibers and Composites; Advanced Optical Materials; and Future Directions. This book contains an author index and a subject index. A list of contributors to the book, with their affiliations, is given at the beginning of the volume.

Fourier Transform Infrared: A Constantly Evolving Technology. By Sean F. Johnston (Laser Monitoring Systems Ltd.). Ellis Horwood: New York, London, Toronto, Sydney, Tokyo, and Singapore. 1992. 340 pp. $71.25. ISBN 0-13-327479-9.

Mr. Johnston has compiled in a single reference a complete history of the major developments in the design of Fourier transform infrared spectrometers in the hardware/optics arena, as well as a perfunctory review of sample handling techniques and instrument evaluation methods for FTIR systems.

The first 10 chapters of the book cover basic optics and the early developments of interferometry prior to the availability of commercial spectrometers in the 1960s. These chapters provide those not conversant in the details of spectrometer design one of the few reviews of interferometry history which is not laden with equations and mathematical trivia. Chapters 10 and 11 cover the period of the 1970s and the development of the early "commercial" systems. These two chapters, as mentioned by the author, are very superficial in content. Any graduate student or novice researcher to the field interested in the details of the history of chemical FTIR will have to turn to one of the excellent reference books on chemical FTIR, such as that by Peter Griffiths of Ohio University.

Chapters 12–14 cover the development of commercial FTIR into the routine analytical method we are familiar with today. Chapter 12 is a very poor review of computer systems, signal processing hardware, and associated software used in FTIR systems. This chapter is the most disappointing of the book, given that FTIR systems are, for all practical purposes, computer assisted analytical infrared spectrometers and this

*Unsigned book reviews are by the Book Review Editor.

chapter does not provide any additional information above that presented in the sales brochures of the spectrometer vendors. Chapters 13 and 14 describe the optical components of most modern spectrometers and are presented in descriptive narrative without supporting mathematics.

Chapter 15 presents an overview of commercial systems as they are marketed today with descriptive information as provided by the instrument vendors. Chapter 16 covers the non-commercial uses of FTIR, such as "space-borne interferometry". This chapter, although entertaining, is probably not very useful to most practicing analytical or physical chemists.

Chapter 17 is devoted to sampling techniques in FTIR and is a very poor substitute for the information provided in Peter Griffiths's classic *Chemical Applications of FTS*. The information presented in this chapter is neither complete nor adequate. The reader is left to determine the usefulness of each method on his own. The sections dealing with novel methods such as polarization interferometry do not mention the analytical applications such as IRRAS or spectro-electrochemistry.

Chapter 18, "The shape of things to come", looks to be an afterthought by the author or editors. The chapter adds information on current techniques, such as FT/Raman, FT/UV, and diode laser interferometry. Finally, the appendix presents a very "quick and dirty" overview of standard measurement techniques used in evaluating spectrometers. Unfortunately the author has neglected to include "poor results" along with the good results so that one can compare, via figures, the results described in the narrative.

Given that this book is presented by the publishers as part of their series on Analytical Chemistry, I cannot recommend this book for anything other than another supplemental reference book on the history of interferometer development.

Dennis Gerson, *IBM*

Synthesis and Applications of Isotopically Labelled Compounds 1991. Edited by E. Buncel (Queen's University) and G. W. Kabalka (University of Tennessee). Elsevier: Amsterdam, The Netherlands. 1992. xxviii + 784 pp. $320.00. ISBN 0-444-89280-X.

This book was developed from the Fourth International Symposium on the Synthesis and Applications of Isotopes and Isotopically Labelled Compounds held in Toronto on September 3–7, 1991. After a preface by the editors, a list of the awards, and brief biographies of the awardees, the book contains 160 chapters and posters organized under the following headings: Plenary Lectures; Banquet Address by Alfred Bader; Synthesis and Applications of Organic Compounds Labelled with Isotopes of Hydrogen; Application of Radioisotopes in Macromolecules: Protein, Nucleic Acid and Monoclonal Antibody Research; New Developments in the Analyses of Isotopically Labelled Compounds; Cyclotron and Reactor Produced Isotopes; Synthesis and Applications of Organic Compounds Labelled with Isotopes of Carbon; Production of Stable and Radioactive Isotopes: Current Status and Future Projections; Application of Labelled Compounds in Drug Metabolism and Toxicology; Application of Isotopes in Organic and Bio-organic Reaction Mechanisms; Synthesis and Applications of Organic Compounds Labelled with Isotopes of Elements other than Carbon; Applications of Stable Isotopes in Magnetic Resonance Imaging (MRI) and Localized Spectroscopy (MRS); The Role of Isotopes and Isotopically Labelled Compounds: Recent Developments and Future Prospects; Application of Isotopically Labelled Compounds in Pharmaceutical Research and Development; Handling Radioisotopes Safely: Laboratory Design, Waste Disposal, and Governmental Regulations Throughout the World; and Poster Session. There are also an author index and a subject index.

Electron Density Theory of Atoms and Molecules. By N. H. March (University of Oxford, Oxford, U.K.). Academic Press: London and New York. 1992. xii + 339 pp. $99.00. ISBN 0-12-470525-1.

Without exaggeration, the 90s can be called the decade of density functional theory (DFT) in quantum chemistry. The emerging popularity of DFT-based electronic structure calculations as a convenient and computationally cheap alternative to the molecular orbital theory and the renewed interest in development of new DFT approaches are the obvious manifestations of this current trend. It is therefore not at all surprising that several books on DFT have been published very recently. The slate comprised of the popular DFT textbook of Parr and Yang, the comprehensive monograph on DFT by Kryachko and Ludeña, and the elegant exposition of the topological theory of atoms in molecules by Bader has now been joined by a book authored by N. H. March.

The new book is distinctly different from the aforementioned monographs and textbooks in both its organization and its target audience. As one of the original developers of density functional theory, March contributed significantly to the field of DFT over the last 40 years, and it is fair to state that his book constitutes a compilation of these contributions. As such, it covers a broad range of topics associated, to one degree or another, with the central theme of electron density.

After two short chapters of preliminary material, the reader is introduced to several applications of DFT to atoms, including the description of heavy atomic ions (Chapter 3) and the calculation of binding energies (Chapter 4). Molecular applications follow in Chapters 5 and 6. Next, the text focuses again on the theoretical side of DFT, reviewing several of its nonrelativistic (Chapters 7 and 8), relativistic (Chapter 9), and time-dependent (Chapter 10) aspects. The last section of the book (Chapter 11) discusses a very specific topic, namely the description of atoms and molecules in plasmas. An unusually large number (28!) of appendices then follows, dealing with various mathematical formulae used in the main body of the text.

As a compendium of equations (including those of a semiempirical or nonrigorous nature) and specific theoretical approaches, of which some have been described only in the original literature and many more have been completely ignored in the books by Parr and Yang, and Kryachko and Ludeña, *Electron Density Theory of Atoms and Molecules* will undoubtedly find a wide audience of chemists and physicists. However, unlike these monographs, March's book cannot be recommended in my opinion as a textbook for a graduate or advanced course, as its sections and subsections are only loosely related to each other and do not follow an orderly progression. Some topics are discussed in great detail, but many important aspects of DFT (such as, for example, Levy's constrained search, local scaling, and newer bounds for electron density) are either merely glanced over or entirely missing. I also find the large number of appendices quite disruptive for following theoretical arguments presented in the book, and I hope that those will be incorporated into the main text in the future editions.

The bibliography reflects the character of the book. The references to the author's own work are detailed and complete, but those to other research are occasionally outdated or incomplete. Overall, I would recommend the book to readers who are interested in extending and deepening their knowledge of DFT. They will find it to be a gold mine of nuggets of theoretical approaches.

Jerzy Cioslowski, *Florida State University*

Advances in Chromatography, Volume 32. Edited by J. Calvin Giddings (University of Utah), Eli Grushka (Hebrew University of Jerusalem), and Phyllis R. Brown (University of Rhode Island). Marcel Dekker: New York. 1992. xx + 270 pp. $125.00 (U.S. and Canada) $143.75 (elsewhere). ISBN 0-8247-8563-0.

C.-K. Lim (Clinical Research Centre, Harrow, England) reviews porous graphite carbon, its preparation, properties, and applications in chromatography (19 pages, 27 references). Silica gel particles are coated with a "melt" of organic material and heated to form a layer of resin; the layer is carbonized and the silica template dissolved to give sturdy porous particles built of two-dimensional graphitized carbon layers. The adsorbent, used in liquid chromatography, is best described as a strong reversed phase adsorbent with a band of delocalized electrons. Electronic interactions are discussed in terms resembling those used by A. V. Kiselev (*Advances in Chromatography, Volume 4*) to describe graphitized carbon black, for example, charge transfer and π-electron overlapping. These specific interactions are sensitive to differences in configuration of isomers. Lim discusses applications to drug and body fluids analysis.

M. W. Dong (Perkin-Elmer Corp.) describes tryptic mapping (30 pages, 62 references) where proteins are cleaved by trypsin and the fragments separated by high performance reversed phase liquid chromatography. The analytical sample can contain 20–150 components. Sample pretreatment, columns, and the instrumentation required to achieve the separation are described. Biotechnological applications such as quality control of recombinant protein are discussed.

K. Robards (Charles-Sturt University-Riverina), V. R. Kelly (Water Resources), and E. Patsalides (University of Sydney, Australia) review the gas chromatographic determination of aqueous solutions of gases (33 pages, 134 references). The oxides of carbon, nitrous oxide, and hydrogen sulfide are of particular interest. The summary presented in tabular form is most useful.

V. P. Pchelkin and A. G. Vereshchagin (Academy of Sciences, USSR) present a detailed review (92 pages, 179 references) of the chromatography of polar lipid classes. Very similar lipids are the main structural components of cell membranes. The authors stress that the analysis is an important part of membranology.

Forensic chemists are the target of the last two papers. J. Hubball (Connecticut State Police Forensic Laboratory) presents an overview (41 pages, 280 references) which focuses on drugs of abuse, flamables and their combustion products as encountered in arson, and explosives. J. B. F. Lloyd (Home Office Forensic Science Laboratory, England) deals with the high performance liquid chromatography of a wide range of explosives and their fragmentation products (88 pages, 218 references). Sample preparation and trace level analysis dominate the analytical problem. Those involved with criminal investigations and prosecution will benefit from both reviews.

Roy A. Keller, *State University of New York, College at Fredonia*