

Additions and Corrections

Electron-Transfer Mechanism for Aromatic Nitration via the Photoactivation of EDA Complexes. Direct Relationship to Electrophilic Aromatic Substitution [*J. Am. Chem. Soc.* 1993, 115, 3091–3104]. E. K. KIM, T. M. BOCKMAN, AND J. K. KOCHI*

Page 3093, Table III: Heading to column 8 should be conv,^d %. Footnote *d* should read as follows: Total conversion to CH₃C₆H₄NO₂....

Page 3103, Figure 6: The second line of the caption should read as follows: nucleophilic (*k*₂') annihilation....

Book Reviews *

Theilheimer's Synthetic Methods of Organic Chemistry. Volume 46. Edited by A. F. Finch. Karger: Basel and New York. 1992. xxii + 504 pp. \$638.50. ISBN 3-8055-5509-1.

Theilheimer's *Synthetic Methods* enters its tenth series with this volume. This annual publication continues its tradition of providing abstracts and supplementary data for the year, this one extending from 1990 to the early months of 1991. Its unique classification system allows easy access to organic chemical transformations organized according to the bond formed, the reaction type, and the bond broken or the "element" eliminated. Thus, for example, cyclopropane formation through reactions with diazo compounds is classified by CC↑↓N, and hydration of an alkene is OC||CC. A further subdivision according to reagents used, not included in the reaction symbols, generally follows the placement of the reagent's principal element in the periodic table. With its juxtaposition of different chemical reactions of the same general type, this classification system affords advantages in literature review for molecular design, especially for the synthetic organic chemist, that are not available in other series or compendia.

A subject index lists names of methods as well as types of compounds and reagents, but not specific compounds. Volume 46 also contains the abbreviated formulas of complex functional groups (e.g., OSi₂ = disiloxanes and OP = phosphine oxides or phosphinous acids and esters) for the 46 volume series, but this index is of marginal utility. Of greater importance is the collation of the reviews in Volumes 45 and 46, which has been organized to aid access via a supplementary reference index.

Overall, this volume provides a well-organized, comprehensive review of the recent organic chemistry literature with sufficient detail to understand the major thrust or achievement in the abstracted publication. Formulas and equations encourage browsing, and the systematic organization of this volume expands the reader's knowledge and understanding of organic chemistry. As has been true of previous volumes, this one should be added to library collections as a valued reference book.

Michael P. Doyle, *Trinity University*

Optical Engineering Series. Volume 29. Electron and Ion Microscopy and Microanalysis: Principles and Applications. By Lawrence E. Murr (University of Texas at El Paso). Marcel Dekker, Inc.: New York, Basel, and Hong Kong. 1991. xiv + 837 pp. \$195.00. ISBN 0-8247-8556-8.

With the necessity of understanding phenomena of scientific and technological importance on a submicron to atomic scale, nearly every researcher is faced with learning about microanalytical techniques. There are a large number of such techniques, the equipment required is generally complex and costly, and sophisticated sample preparation techniques are often required. In order to solve a particular problem, a researcher must gain a general knowledge of the various applicable methods. This book by L. E. Murr performs an important function in providing a source of information regarding the principles, equipment, and methods relating to obtaining microanalytical information using a wide range of techniques. Some of the techniques emphasized include thermionic electron emission microscopy, field emission microscopy, scanning tunneling microscopy, electron probe microanalysis, ion microprobe, scanning electron microscopy, electron diffraction, transmission electron microscopy, and high voltage electron microscopy. Numerous other techniques are discussed

more briefly. The type of information which can be obtained with each technique is described along with its limitations. Micrographs and spectra obtained in application studies with each technique are provided. In addition to describing the techniques, fundamental quantum mechanical and solid state principles are provided; electron, ion, and light optics are described; and specimen preparation techniques are emphasized for a large number of microanalytical techniques. Tremendous gains have been made during the last decade with regard to improvement of resolution and in the development of new techniques with atomic resolution. These developments are described, and adequate references are given. This book is well written and is appropriate for use as a text in a senior or graduate-level course or self study by physical scientists or engineers who wish to learn about microcharacterization techniques for materials.

Gar B. Hoflund, *University of Florida*

Advances in Medicinal Chemistry. Volume 1. Edited by Bruce E. Maryanoff and Cynthia A. Maryanoff. JAI Press Inc.: Greenwich, Connecticut, and London. 1992. xiv + 274 pp. \$78.50. ISBN 1-55938-170-1.

Volume 1 of this series covers a range of important topics of current interest in the field of medicinal chemistry. As the editors point out, practitioners of this area of science are rather diverse, as are the contributors to this issue. The first chapter by Wender and Cribbs describes their work on tumor promoters and their interaction with protein kinase C. Included is an extensive biochemical background of this important enzyme, followed by a discussion of the various synthetic approaches to phorbol and the development of a pharmacophore model using computer modeling.

The contribution by Shinkai and Sigal discusses the chemistry and biology of FK-506. After a detailed description of most of the synthetic efforts directed toward FK-506 and its various fragments, the authors elaborate on the biochemical mechanism of action of FK-506 including a summary of significant clinical findings.

A more traditional medicinal chemistry effort is recounted by Muchowski on the development of the antiinflammatory agent ketorolac. This account is a valuable example of how a drug is brought from conception all the way to the marketplace. A discussion of the various pyrrole syntheses required to generate analogs is followed by structure-activity studies and the selection of a clinical candidate. The process chemistry required for large-scale preparations is also discussed as well as recent results from various clinical trials.

An historical perspective on the partial syntheses of corticosteroids at Upjohn is presented by Livingston which includes the various methods of introduction of the 17-position side chains of progesterone and cortisone. Of particular interest is the use of silicon containing "tethers" to deliver reagents from the desired face of the steroid nucleus.

The pyridinone based alkaloid huperzine A is the subject of a chapter by Kozikowski and co-workers. A description of the total synthesis is accompanied by the syntheses of a number of interesting analogs. A thorough treatment of both the *in vitro* and *in vivo* pharmacology of huperzine A as an inhibitor of the acetyl cholinesterase (AChE) enzyme is covered in the latter half of the chapter.

Albrecht and Christenson describe the development of dual-acting cephalosporins as novel antibiotics. Included is an explanation of the concept and results of incorporating a cephalosporin and a quinolone antibiotic in a single molecule to create a broader spectrum agent. The

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