

Book Reviews

The Chemistry of Functional Groups: The Chemistry of Enols. Edited by Zvi Rappoport. John Wiley & Sons, New York. 1990. xvi + 823 pp. 16 × 25 cm. ISBN 0-471-91720-6. \$430.00.

The interconversion of aldehydes and ketones with their enols has been the subject of intense investigation since the early 1900s. Although rates of enolization of carbonyl compounds are fairly straightforward to measure by a variety of techniques, determination of the rates of the reverse reaction has been hampered because of the inaccessibility of the enols of simple ketones. Recently, however, Kresge, Capon, and their collaborators have sparked a resurgence in the area of enol chemistry by developing methods to generate simple enols in greater than equilibrium concentrations. These new approaches have opened up the field to quantitative investigation and have enabled the accurate determination of keto-enol equilibrium constants and acidity constants for a variety of aldehydes, ketones, and their enols.

In this volume, editor Zvi Rappoport (himself a pioneer in enol chemistry) has collected 12 definitive chapters by leading authorities on enol chemistry. The areas covered are primarily those that would be considered physical or physical organic in nature. Thus, there is little on the use of enols and enolates in synthesis. Topics include theoretical calculations, thermodynamics, spectroscopy, structural chemistry, photochemistry, biochemistry, and organometallic chemistry. In addition, there are discussions of unstable enols, stable enols, and enols of carboxylic acids and esters, as well as keto-enol equilibrium constants and rates and mechanism of enolization and ketonization. A notable omission is a section on dienols, although this topic was reviewed by Capon in *The Chemistry of Enones* in 1989. These chapters emphasize recent developments that for the most part have not been reviewed previously (or recently); literature coverage is typically to mid-1989.

Although the chapters are extensive and often exhaustive, this book is not a mere compilation of data, but rather a series of well-written critical discussions of various aspects of the chemistry of enols. The only criticism that this reviewer has is the price, which is prohibitive for virtually all individual purchasers. This is unfortunate as this book, and others in the series, deserve wider dissemination than they currently have.

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Topics in Inclusion Science. Calixarenes: A Versatile Class of Macrocyclic Compounds. Edited by J. Vicens and V. Böhmer. Kluwer Academic Publishers, Norwell, MA. 1991. xii + 263 pp. 16 × 24.5 cm. ISBN 0-7923-0714-3. \$99.00.

Calixarenes are the cyclic oligomers produced by condensation of para-substituted phenols with formaldehyde. It is only relatively recently that the significant applications and uses of calixarenes in host-guest chemistry have been recognized; however, the chemistry of these compounds has rapidly gained momentum in the 1980s. Following discovery of the crown ethers and the seminal developments with cryptands and spherands, there has been a surge of research into so-called host-guest, supramolecular, or receptor chemistry including comparisons of this chemistry with biological processes. The cyclic, bowl, or basket-shaped calixarenes are now viewed as potentially valuable macrocyclic receptor molecules.

This book, which is divided into four parts, contains 10 chapters contributed by leading scientists in the field of calixarene chemistry. Part one describes the history and synthesis of calixarenes. Part two discusses the structure and conformation of these

substances as well as their inclusion properties. In part three the inclusion of various ion and neutral molecular guests in solution and in the solid state is detailed. The chemistry of such inclusion compounds ranges from kinetically stable complexes to enzyme-like catalysis, and from selective recognition at air-water interfaces to conformational or micellar properties in solution. In part four are presented potential industrial applications for the calixarenes.

This book that deals with a special class of host-guest chemistry, recognized by the 1987 Nobel Chemistry Prize awards, should appeal to almost all chemists. Medicinal chemists, in particular, may find it a source of novel new approaches to potential therapeutic agents.

Staff

Polymeric Drugs and Drug Delivery Systems. Edited by Richard L. Dunn and Raphael M. Ottenbrite. American Chemical Society, Washington, DC. 1991. xii + 313 pp. 15 × 23.5 cm. ISBN 0-8412-2105-7. \$74.95.

The first of the four sections into which this book is divided functions as an overview of the subsequent sections. These include biologically active polymers, polymeric matrices, liposomes, and interactions between polymeric drug-delivery systems and biological systems. These initial chapters provide an excellent introduction to the detailed analyses which follow in the subsequent sections.

The second section of the book includes discussions on biologically active polymers, including those acting on the immune system; polymeric antitumor drugs; and several drugs whose unique natures offer unusual drug-delivery possibilities, such as transcellular transport or absorption and retention in the lung.

The third section deals with polymers useful for drug delivery. It includes chapters on poly(phosphoester-urethanes), pseudopoly(amino acids), poly(ortho esters), blends of poly(D,L-lactic acid) and ethylenevinyl acetate, poly(*N,N*-dimethylacrylamide)-1-polyisobutylene, poly(2-hydroxyethyl methacrylate)-1-polyisobutylene, poly(acrylic acid) and poly(methacrylic acid), and enzyme-digestible hydrogels of albumin-cross-linked polyvinylpyrrolidone. This section includes discussions on synthesis, characterization, release kinetics, and in vivo performance of a number of these systems.

The fourth section discusses liposomal drug delivery. Chapters dealing with delivery of peptide drugs, organ-specific drug delivery, and several chapters discussing other lipid microsphere drug-delivery systems are included.

Each chapter contains a detailed bibliography, and the entire volume is indexed by author and subject. The book will be useful as an introductory text to polymeric drug-delivery systems, although several of the chapters deal with relatively new polymers, and several of the more traditional polymeric drug-delivery systems are not discussed. The range of topics from synthetic chemistry to biological activity assures the usefulness of this book to a wide variety of scientists.

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The Biochemical Basis of Neuropharmacology. Sixth Edition. By Jack R. Cooper, Floyd E. Bloom, and Robert H. Roth. Oxford University Press, New York. 1991. xi + 454 pp. 14 × 21 cm. ISBN 0-19-507118-2. \$24.95 (paperback).

This is the sixth edition of a very popular book that very clearly describes the biochemistry of drugs that affect nervous tissue.

It has been updated since the fifth edition and the chapter dealing with cellular mechanisms of learning and memory has been reinstated. Following an introductory chapter are ones that describe the cellular and molecular foundations of neuropharmacology, metabolism in the central nervous system, receptors, modulation of synaptic transmission, amino acid transmitters, acetylcholine, norepinephrine and epinephrine, dopamine, serotonin and histamine, and neuroactive peptides.

The chapters are easily read as they lucidly summarize the application of biochemical approaches to the understanding of neurotransmitter and drug effects in the CNS. References are not exhaustive, but will certainly lead the reader to the most important reviews and citations in the field. In its entirety this book is a superb introduction to neuropharmacology; it is highly recommended for graduate students and nonspecialists in medicinal chemistry and all others who want to become familiar with the general field of neuropharmacology.

Staff

Books of Interest

Migraine and Other Headaches. The Vascular Mechanisms. (*Frontiers in Headache Research. Volume 1*). Edited by Jes Olesen. Raven Press, Inc., New York. 1991. xxv + 358 pp. 15.5 × 24 cm. ISBN 0-88167-795-7. \$94.50.

Drug Resistance as a Biochemical Target in Cancer Chemotherapy. *Bristol-Myers Squibb Cancer Symposia. Volume 13*. Edited by Takashi Tsurao and Makoto Ogawa. Academic Press, Inc., San Diego, CA. 1991. xxv + 342 pp. 16 × 23.5 cm. ISBN 0-12-702295-3. \$55.00.

Laboratory Standards: A Manual for the Workplace. Project Editor, Linda S. Wereley. J. J. Keller & Associates, Inc. Neenah, WI. 1991. iii + 516 pp. 27 × 29 cm. ISBN 0-934674-99-X. \$95.00.

The Organic Constituents of Higher Plants. Sixth Edition. By Trevor Robinson. Cordus Press, North Amherst, MA. 1991. iv + 346 pp. 22 × 28.5 cm. ISBN 0-935118-03-0. \$18.50.