

## BOOK REVIEWS\*

*Organic Reactions, Volume 44.* Edited by LEO A. PAQUETTE. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158. 1993. vii+613 pp. 15.5×23.5 cm. \$95.00. ISBN 0-471-30302-X.

This volume consists of two chapters of approximately equal length. The first, by H.J. Reich and S. Wollowitz, covers the preparation of  $\alpha,\beta$ -unsaturated carbonyl compounds and nitrites by selenoxide elimination. The second, by M.T. Crimmins and T.L. Reinhold, covers enone olefin [2+2] photochemical cycloadditions. Both chapters follow the usual *Organic Reactions* style, and include exhaustive tables of examples and lists of references (735 and 460, respectively). The authors are to be thanked for their important contributions to the literature of these two very useful reactions.

*Biological Mass Spectrometry: Present and Future.* Edited by TAKEKIYO MATSUO, RICHARD M. CAPRIOLI, MICHAEL L. GROSS, and YOUSUKE SEYAMA. John Wiley and Sons Ltd., Baffins Lane, Chichester, West Sussex, PO 19 1UD, UK. 1994. xxii+666 pp. \$180.00. ISBN 0-471-93896-3.

*Biological Mass Spectrometry* is composed of manuscripts of the major papers presented at the Kyoto International Conference on Biological Mass Spectrometry held in Japan in 1992. This conference had as a major priority the review of the state of the art of biological mass spectrometry, which is outlined very well in this volume. The contributors are well-respected mass spectrometrists who are leading the advancements in modern biological mass spectrometry.

The book is divided into three sections: 1. Introduction, 2. New Instrumentation, and 3. New Applications. In the Introduction, Drs. Matsuo and Seyama outline the basic aspects of mass spectrometry using the metaphor of a 'tree' to explain relationships, development, and growth possibilities.

The second section, New Instrumentation, is well organized and each of the fifteen chapters is extremely well written. This section is subdivided into three parts: Ionization, Mass Analysis, and Structure Methods. Each chapter is introduced with a short history followed by a description of the process or technique. This is followed by discussions of current uses and applications and, finally, considerations of future possibilities. The chapters on ionization cover fast atom bombardment (fab), electrospray, on-line lc/ms and ce/ms, matrix-assisted laser desorption/ionization (maldi), and reionization and characterization of neutral losses from biomolecular ions. The Mass Analysis chapters include ion chemistry of biopolymers utilizing four-sector mass spectrometers, simultaneous detection in sector mass spectrometry, triple quadrupoles and hybrid instruments for tandem ms, ion trap ms, Fourier transform ms, and tandem time-of-flight ms. The section on Structure Methods details collision and surface-induced dissociation and ion chemistry for structure elucidation of biomolecules.

The third section, New Applications, is subdivided into six parts which illustrate the breadth of structures that newer instrumentation and techniques can explore. The individual authors describe advances which have been achieved in MS in the principal areas of biological chemistry. These chapters consider peptides and proteins, oligosaccharides and lipids, nucleic acids, xenobiotics and metabolites, toxic compounds, and compounds of special interest in analytical and organic chemistry. Of particular interest to the natural products chemist is chapter 3.17 entitled 'Chromatography and Mass Spectrometry for Analysis of Natural Products'. In this chapter, the authors discuss new methodology for combining techniques in order to utilize mass spectrometry for the screening, identification, and structural characterization of natural products. Included are descriptions of the use of chromatographic systems with fabms, including tlc coupled with fab to analyze tetracycline antibiotics. The application of lc/Frit-fab-ms for the analysis of microcystins contained in the culture strain *Microcystis aeruginosa* M-228, and the application of high-speed countercurrent chromatography (hscoc) coupled with Frit-fabms for the analysis of colistin, a peptide antibiotic produced by *Bacillus colistinus* are also described.

Overall, this book is a pleasure to read and presents a comprehensive view of modern biological mass spectrometry. While the descriptions can be easily understood by those fairly new to the area, the breadth of coverage and the references included with each chapter make this volume also valuable to the more experienced mass spectrometrists.

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

*Extraction of Natural Products Using Near-Critical Solvents.* Edited by M.B. KING and T.R. BOTT. Blackie Academic and Professional, 29 West 35th Street, New York, NY 10001. 1993. xi+325 pp. 15.5×23.5 cm. \$129.95. ISBN 0-7514-0069-6.

This book is comprised of a well-chosen set of review articles, and addresses a long-felt need for a text on near-critical and supercritical fluid science and technology as applied to natural products. The advantages of these unique inorganic solvents, including product quality, environmental compatibility, and nonflammability, are amply illustrated. It is gratifying to see in print the "rules of thumb" for supercritical fluid solvation, i.e., generally speaking, what types of material can and cannot be dissolved in near-critical and supercritical fluids. These rules frequently go without saying for those knowledgeable in the field, and it seems are just as frequently ignored in patents granted to some with little experience in the field.

It was found most useful to have material covering basic principles, conventional organic solvent techniques, regulatory aspects, equipment design, and economics all under a single cover. There are also chapters devoted to the three specific applications which have been commercialized to date—hops extraction, coffee and tea decaffeination, and extraction of flavors and fragrances, which to this reviewer's knowledge, are the most complete descriptions available. Generous bibliographies for all chapters make it easy to pursue particular topics in greater depth. Overall, it provides an excellent introduction to the topic and serves as well as a convenient reference for workers in the natural products field.

This text is also of importance to the general field of critical fluids, and represents one of the most recent and complete available. With the exception of McHugh and Krukoni's *Supercritical Fluid Extraction* (2nd edition, Butterworth-Heinemann, 1994), which gives an overview of the entire field of critical fluid technology, all other texts on this subject are derived from symposia proceedings and thus do not provide a comprehensive treatment. By focusing on natural products, King and Bott are able to provide an in-depth look at one of the most important areas of application of critical fluids. Also provided, while not strictly within the purview of the book's title, is a chapter reviewing applications of critical fluids in areas other than natural products, in particular as media for reaction and recrystallization. And while also not within the purview of the title, workers in the field of critical fluids may find themselves wishing that an extra chapter or two on extractions of non-natural products, and the important application of critical fluid chromatography, had been included. Nevertheless, this book must be considered one of the two definitive reference works in the field.

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