

Book Reviews

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BOOK REVIEWS

Catalytic Asymmetric Synthesis. Ed. by Iwao Ojima, VCH Publishers, Inc., 220 East 23rd Street, New York, NY 10010. 1993. xiii+476 pp. 16×24 cm. \$110.00. ISBN 1-56081-532-9.

This is an excellent reference text on non-biological methods of asymmetric synthesis. It will serve as a valuable reference guide for teaching endeavors in the area of asymmetric synthesis. The chapters are written by authorities in their respective fields and appear to be reasonably exhaustive and up-to-date, and they differ in their focus on practical synthetic applications versus mechanistic descriptions of the processes.

Some sections offer analysis of catalytic processes in the context of large-scale industrial applications, notably Chapters 1 and 2. Other chapters provide excellent rationales of the particular processes, for example, the section on asymmetric oxidation. Only one chapter (4.3) makes a direct comparison of the discussed methodology with a corresponding biological system. The book consists of nine sections that cover induction of asymmetry in the formation of C—H, C—O, C—C bonds, in isomerization processes, in organometallic allylation and carbonylation, and in the area of Lewis acid and phase-transfer catalysis.

A chapter on chiral deprotonation and protonation would have been an excellent addition to this otherwise largely flawless volume. The various sections differ greatly in their focus in explanation of the chemistry; with some purely compilatory, and others offering detailed rationale of the processes as they were understood at the time of writing. It would have been useful to have had an introductory section, written by the Editor, defining known terminology and rules of asymmetric bond forming reactions. A good book to complement this work would therefore be *Asymmetric Synthesis* by Aitken and Kilenyi.

The Appendix section, which compiles the known chiral auxiliary groups, is extremely useful for rapid scanning and structure location. Overall, this is an excellent reference guide which, when combined with the aforementioned text and some current reviews on biologically mediated asymmetric processes, will make for an excellent compendium for rapid access to enantioselective methodology. However, the reader should note that pp. 89–99 contain the wrong headers.

TOMAS HUDLICKY, *Virginia Polytechnic Institute and State University*

Cyclitols and Their Derivatives. TOMAS HUDLICKY and MARY CEBULAK. VCH Publishers, Inc., 220 East 23rd Street, New York, NY 10010-4606. 1993. vii+315 pp. 16×24 cm. \$85.00. ISBN 1-56081-633-3.

This book is really just a checklist of cyclitols and their derivatives, which the authors have organized into six major groups depending on the number of hydroxyl groups and their degree of unsaturation. Each entry (some 250 or more) gives the name of the compound, its structure, reference to its isolation or identification, and where known, its physical constants (mp, $[\alpha]_D$), elemental analysis, spectral properties (ir, ^1H -nmr, ^{13}C -nmr, ms), and references to its synthesis. Unfortunately, the list excludes the biologically important phosphate derivatives which are of most current interest. The authors suggest in their Introduction that because of the voluminous literature in this area, a separate volume would be necessary. Each entry begins on a separate page. While this has some advantages, many entries take up half a page (or even less) and thus prospective purchasers may balk at paying for a lot of blank paper.

While the list will be of value to those working in the field, its specialized nature and the ease of carrying out modern literature searches mean that it is unlikely to attract a wide readership or be included in many personal libraries. The current book does not and is not intended to replace Posternak's "The Cyclitols" published back in 1965, but it does highlight how comprehensive the latter book was and the crying need for its update.

One frequently reads at the end of a book review a comment that while the cost of the book may be beyond the purse of an individual its purchase by their library is essential. With the present financial constraints of most libraries this is one book that our library will be forgoing.

R.C. CAMBIE, *University of Auckland*

Human Medicinal Agents from Plants. Edited by A. DOUGLAS KINGHORN and MANUEL F. BALANDRIN. ACS Symposium Series No. 534. American Chemical Society, Washington, D.C. 1993. xii+356 pp. 15×22.5 cm. \$89.95. ISBN 0-8412-2705-5.

This volume was developed from a symposium sponsored by the Division of Agricultural and Food Chemistry of the American Chemical Society held at the 203rd ACS National Meeting in San Francisco, CA in April, 1992. Most of the manuscripts were actually received for publication in early 1993. There are 22 chapters ranging from 8 to 26 pages in length. The 48 contributing authors provide timely perspectives from academia, industry, and government laboratories. An introductory chapter (written by the Editors and N. Farnsworth) is devoted to a review of plant-derived natural products currently in use or in development. Subsequent chapters provide overviews of biodiversity issues (A. Gentry), chemistry and utility of traditional medicines (chapters by K.-H. Lee and V. Tyler), plant natural products research in industry (M. O'Neill and J. Lewis), simple benchtop bioassays (J. McLaughlin, C.-j. Chang, and D. Smith), transformed plant tissue culture (G. Towers and S. Ellis), algal products (G. König and A. Wright), aspects of logistics in drug discovery (chapters by D. Soejarto and J. McChesney), and the National Cancer Institute's natural product programs (chapters by G. Cragg *et al.* and J. Cardellina *et al.*). Several detailed case histories are also presented, including those of taxol (D. Kingston), camptothecin (M. Wall and M. Wani), forskolin (N. de Souza), garlic (L. Lawson), and *Artemisia* (D. Klayman). The remaining chapters discuss progress in searches for plant-derived compounds with specific bioactivities, including molluscicides and larvicides (M. Maillard, A. Marston, and K. Hostettmann), kinase activators (F. Evans and N. Hassan), treatments for opportunistic infections associated with AIDS (A. Clark and C. Hufford), anticancer agents (G. Cordell *et al.*), and cancer chemopreventive agents (J. Pezzuto).

Most of the chapters focus primarily on the contributors' work in their specialties, but many of them also provide broader insights. The more general contributions provide especially interesting reading. Considerable effort on the part of the authors is evident in most of the chapters, well beyond mere translation of symposium presentations. Most of the chapters are extensively referenced, with nearly two-thirds listing 40 or more citations. The reader will find this book to be densely packed with a useful compilation of background reference material, as well as valuable reviews of research programs in many of the world's leading plant natural products laboratories. A number of the chapters are updates of reviews or reports published previously by the contributing authors in other venues, but an appealing feature of this compilation is its assembly of this information in a single volume. This book is highly recommended as a worthwhile addition to Departmental libraries.

JAMES B. GLOER, *University of Iowa*

Practical Organic Mass Spectrometry: A Guide for Chemical and Biochemical Analysis. Second Edition. J.R. CHAPMAN, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158. 1993. 330 pp. 15×22.5 cm. \$54.95. ISBN 0-471-92753-8.

This compact book is written for the practicing mass spectroscopist but also should be of value to a much wider audience. The detailed descriptions of instrumentation and techniques will find favor with mass spectroscopists while the short reviews of the principles of many experiments in mass spectrometry will be of value to the interested general reader. The book covers the appropriate literature extensively and in an up-to-date fashion (with the exception of some data collection references which unfortunately were not brought up to date for this edition). The writing is clear, the index is thorough and the book is remarkably current; as such it is an excellent quick-reference book on a wide range of topics in mass spectrometry.

Emphasis falls principally on sample introduction methods, especially those involving chromatographic separations, and on ionization techniques, including the full range of chemical, desorption and spray ionization methods. These two topics take up five of the eight chapters. In dealing with these subjects, the author provides a brief summary of principles and then gives practical information on each experiment. The emphasis generally follows the present importance of techniques, and on this basis, for example, negative ion chemical ionization receives substantial attention. Examples of spectra are given, in order to illustrate characteristics; but this is not a spectral interpretation book and the focus is not often on the chemical reactions which underlie mass spectrometry. However, the author has clearly described the various introduction and ionization methods, given their principal characteristics and provided a critical assessment of their relative merits, all in an easy style accompanied by illustrations of high quality.

An unusual feature of the book is a useful treatment of quantitative analysis. Throughout, the quality of the data obtained by mass spectrometry, as well as the methods of obtaining it, are in the foreground. The discussion of EPA methods is another unusual and welcome feature. The treatment of tandem mass spectrometry, new to this edition, covers the principles well, although the range of instruments and experiments which are possible makes it difficult to be both brief and comprehensive in treating this topic.

The discussion of mass analyzers is well done given the very few pages allotted to this topic. The emphasis on more traditional types of mass analyzers, especially sectors and quadrupoles, vis-à-vis time-of-flight, ion trap, and ion cyclotron resonance instruments may be too much in favor of the former, given the rapid advances in capabilities and use of the latter. However, the balance both here and in the treatment of ionization and analysis methods will probably correspond well to the present capabilities of the mass spectrometry laboratories used by the readers of this journal. Dr. Chapman's book is recommended, enthusiastically, for those who use mass spectrometers, either themselves or through a service laboratory. It will certainly facilitate the intelligent use of these increasingly valuable instruments.

R. GRAHAM COOKS, *Purdue University*