

# Book Reviews\*

**Stereochemistry of Organic Compounds.** Ernest L. Eliel (University of North Carolina), Samuel H. Wilen (City College of the City University of New York), and Lewis N. Mander (Australian National University). John Wiley & Sons, Inc., New York, NY. 1994. xv + 1190 pp text + 19 pp glossary + 56 pp index. 18.4 cm × 25.8 cm. ISBN 0-471-01670-5.

*Stereochemistry of Organic Compounds* is a much-needed update of Professor Eliel's important *Stereochemistry of Carbon Compounds*, published in 1962. There are more than 4000 cited references to allow the reader access to more detailed information if needed. There are fourteen chapters that cover all aspects of stereochemistry, from its origins in molecules, to nomenclature, to techniques for determining relative and absolute configuration. Professor Mander adds Chapter 12, which is an excellent overview of "Stereoselective Synthesis."

The book contains definitions of all terms and elaborate discussions of each concept and related topics, along with pertinent examples of each. Techniques for structure determination are presented, along with working definitions of various stereoisomers such as enantiomer, diastereomer, etc. as well as definitions and methods for determining optical activity, circular dichroism, and optical rotatory dispersion. Many techniques used to determine these properties are also discussed. Some of the salient features of the book are definitions and discussions of relative and absolute configuration; properties of stereoisomers and how to distinguish them; the basis of resolution and methods for resolution; definitions and discussions of prochirality and prostereoisomers; and stereochemistry in alkenes, cyclic and acyclic molecules, and molecules with chiral axes. In short, this book contains everything you want to know about conformation, configuration, optical activity, stereoisomers, and properties of molecules arising from these phenomena.

The stereoselective synthesis chapter (12), by Mander, gives the bases of stereoselective and stereospecific syntheses, as well as definitions. The chapter is organized primarily by reaction type (acyl addition, pericyclic reactions, addition reactions, aldol condensations, sigmatropic rearrangements, catalytic hydrogenation, etc.). Several basic strategies are presented for synthesis, including the use of ring templates,  $\pi$ -interactions, chiral auxiliaries, chiral templates, catalysis, enzyme-based processes, etc.

A very useful feature is the glossary, which provides formal definitions of important terms and concepts. Use of the glossary for a definition then requires transfer to the index to find that term or concept in the text.

This is one of those books that should be on every working chemists shelf and also belong to every student of Organic Chemistry. Given the major importance of preparing enantiopure compounds in both an academic

laboratory and in an industrial lab, this is the book you will go to first. If you are doing synthesis and could have only a few books at your disposal, this should be one of them. It is an important contribution to the synthetic community and to all organic chemists.

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**Desk Reference for Organic Chemists.** Michael B. East (FAR Research) and David J. Ager (NSC Technologies). Krieger Publishing Company, Malabar, FL. 1995. 492 pp. 15 × 22.5 cm. \$64.50. ISBN 0-89464-818-7.

This handy little volume contains several very useful tables of data for organic chemists and researchers in related areas such as natural products and medicinal chemistry. The first chapter (114 pp) consists of a list of some 4000 chemical acronyms, from A (actin or adenine or adenosine) to ZTP (5-aminoimidazole-4-carboxamide-1- $\beta$ -D-ribofuranosyl-5'-triphosphate). This is a very useful compilation, particularly when the reader is attempting to decipher a paper in a field outside his or her own area and meets an unfamiliar acronym. The list does highlight one problem with the uncritical use of acronyms, which is that the same acronym can have very different meanings in different contexts. Thus, DAP can be dibasic ammonium phosphate, diallyl phthalate, or diamminopimelic acid, and only the context (or possibly a footnote) will indicate which is intended.

Chapter 2 (44 pp) provides a list of physical acronyms, including many of interest to natural products researchers such as acronyms for the various NMR and mass spectrometric techniques. Chapter 3 (12 pp) is a short but useful glossary of stereochemical and synthetic terms, with a few references to more comprehensive resources on the subject.

Chapters 4–6 all contain material which is available elsewhere, but nevertheless its inclusion here is convenient. Chapter 4 (114 pp) is a list of named reactions, from the Abramovitch–Shapiro Synthesis to the Zipper reaction. This type of material is also available in the Merck Index; although it was removed for the 11th Edition, it has been reinstated by popular request in the 12th Edition. A helpful feature of this section is that each named reaction has at least one literature reference, typically to a review article or a readily accessible journal. Chapter 5 (20 pp) is a list of named reagents, and the book concludes with a list of review references (Chapter 6, 192 pp). A list of reviews such as this is in friendly competition with an online database such as "Organic Reviews," available gratis to members of the Organic Division of the ACS. The data sets

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

appear to be complementary, however; a search on the keyword "Prostaglandins" gave 14 references in Chapter 6 and 20 references in the database, but only a few of the references were in common. Likewise, a search on "Euphorbia" gave one reference in Chapter 6 and three different references in the database. It thus appears that a researcher could profitably consult both the book and the database in searching for references to review articles.

In summary, the book is a convenient source of information on a range of reference material, and many researchers will profit from having a copy on their desk.

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**Sponges in Time and Space.** Edited by Rob W. M. van Soest (University of Amsterdam, Netherlands), Theo M. G. van Kempen (Free University, Amsterdam, Netherlands), and Jean-Claude Braekman (Free University of Brussels, Belgium). A. A. Balkema, Brookfield, VT. 1994. xviii + 515 pp. 17 × 24.5 cm. \$95.00. ISBN 90-5410-097-4.

This book is based on lectures given at the 4th International Porifera Congress held in Amsterdam in April 1993. The unusual title is guaranteed to draw attention to a unique and very fine monograph. The Editors have successfully brought together chapters providing a robust overview on past and contemporary directions of sponge research. A broad array of articles and reviews is represented here as contributions are from researchers engaged in every conceivable aspect of sponge studies. There are six major subjects arranged along concepts of *Time* (paleospongology, taxonomy), *Space* (biogeography, ecology, development, and cell biology), and *Beneficial Applications* (natural products).

An overview section sets the stage for what is to follow in the remaining 55 individual papers comprising this work. Some very appealing ideas can be found in the introduction, such as the following: sponges remain as the primary target in the search for "drugs from the sea"; sponges lead the way in establishing a link between chemistry and taxonomy; the application of PCR techniques may eventually provide a deeper understanding about sponge systematics; further research on symbiosis may resolve confusing issues of sponge chemistry. As a practical point most will not be drawn to read each of the individual papers, but will rather focus on groups of papers logically clustered in the three major sections noted above. The largest section comprises 52% of the text, and it deals with the topics under *Space*. Each paper in this section is highly organismal and/or cell biological in its content. This portion of the book provides an opportunity to visit, under one cover, many subjects quite distant from natural products chemistry.

Those seeking articles highlighting natural products chemistry will want to explore at least nine papers representing 16% of the text. These papers cover a wide range of topics including the following: (1) sterol analysis to explore sponge heterogeneity (pp 65–73); (2) heavy metal uptake by sponges (pp 351–354); (3) cell culture to produce secondary metabolites (pp 395–406); (4) biosynthesis of secondary metabolites (pp 427–440); (5) methods to separate secondary metabolites (pp 441–450); (6) polytheonamides from *Theonella* (pp 453–457); (7) transfer of secondary metabolites between nudibranchs (pp 459–472); (8) bioprospecting and development of pharmaceuticals (pp 473–484); (9) cytotoxins (pp 485–496). Each author in this section considers the past and current status of the topic presented, but very few provide discussions devoted to future prospects.

There are some additional nice touches contained in this volume. A picture near the end, though rather small in size, shows the 100 participants of this congress. Every participant's name is listed along with a complete address including a FAX number. An entertaining sponge poem appears just before the preface! Each chapter is laid out in a uniform style, and they all contain numerous diagrams that are extremely clear and add enormous value. The index is complete and is especially useful because it includes both scientific names and technical terms. An author index is also provided.

This volume will be an important reference book for many years to come. The historical background, comprehensive discussions, breadth of subjects covered, as well as the wealth of figures are the most appealing features of this volume. Individuals actively involved in sponge research will want to have *Sponges in Time and Space* on their shelf.

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**Taxonomy of Economic Seaweeds, With Reference to Some Pacific Species. Volume V.** Edited by Isabella A. Abbott (University of Hawaii). California Sea Grant College System, La Jolla, CA. 1995. xx + 254 pp. 15 × 23 cm. \$10.00. No ISBN.

This fifth volume in the series presents the results of a workshop on the taxonomy of the groups *Sargassum*, *Gelidium*, *Gracilaria*, and *Eucheuma*, held at the University of Hawaii in 1993.

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