

Presumably, this duplication is deemed necessary because each volume can be purchased separately and therefore must be a complete entity in its own right. Unfortunately, for those who purchase the complete set, they will buy nine copies of the same chapter 1, nine copies of an obituary notice (in this writer's opinion, out of place), and in volume 9 a second set of the indexes. Quite a lot of excess paper, and combined with the very high price of this series, will cause most libraries and individuals not to purchase these volumes. This is unfortunate since it is a marvelous and monumental piece of work, but a more realistic approach to pricing and dividing the series is needed.

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Carbohydrate Mimics: Concepts and Methods. Edited by Yves Chapleur. Wiley-VCH Publishers: Weinheim. 1998. 579 pp. \$190.00. ISBN 3-527-29526-7.

Carbohydrate Mimics: Concepts and Methods is an elegant, select compilation of works from laboratories around the world. The audience should include natural product and medicinal chemists, pharmaceutical laboratories, as well as both the budding and the expert carbohydrate chemist. Carbohydrates, which play roles in many biological phenomena in Nature, are challenging targets for the chemist with goals such as proving a structure, elucidating critical chemical functionalities, and increasing pharmacological efficacy. All chapters, save one on modeling of oligosaccharide conformations, describe chemical syntheses that pursue these goals.

The creation of various analogues of carbohydrates, including azasugars, C-linked sugars, carbasugars, aminocyclopentitols, and carbocycles, is described. The mimics possess close similarity to natural molecules yet display altered shapes, functionalities, or hydrophobicity, or possess refractory linkages that transform their biological activity or pharmacology. Some of the other syntheses capitalize on using naturally occurring sugars as chiral starting materials for more complex molecules. In the last half of the book, dynamic biomedical arenas, including inflammation, diabetes, cancer, and signal transduction, are dissected using carbohydrate mimics or analogues. Figures depicting the assays for biological activity and the data are often presented; many of these mimics possess promising attributes. Some of the current topics include work with architectonic (e.g., dendritic) molecules, combinatorial libraries, and rational design of enzyme inhibitors. Several chapters describe nucleic acid or nucleotide-based molecules that utilize carbohydrates to alter the physicochemical nature of the natural molecules.

Every chapter starts with a concise and often very interesting introduction. The logic or rationale in designing experiments is explicitly stated in most cases. Throughout the book, the structure figures are systematically portrayed and labeled in a clear fashion; very rarely is a typesetting error found. The references appear as timely as the arduous pace of carbohydrate chemistry allows.

In summary, this book is a well-rounded and detailed encyclopedia of current and standard carbohydrate chemistry focused on the construction of mimics. It should save much time in the library, assist in designing syntheses, and spur on more chemists into the world of carbohydrates.

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Named Organic Reactions. By Thomas Laue and Andreas Plagens. J. Wiley & Sons: New York. 1998. 283 pp. \$69.95. ISBN 471-97142-1.

The practice of naming organic reactions has long been used by synthetic chemists to convey complex information in a concise manner.

This book contains a collection of 134 carefully chosen named reactions, detailing each with clearly drawn mechanisms, up-to-date references from the primary literature, and well-written accounts covering not only the mechanistic aspects of the reactions but also details of side reactions and substrate limitations. The reactions which are covered are the mainstay of undergraduate and graduate synthetic organic chemistry courses, and as such this book will make an excellent resource for chemistry students and academic libraries.

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Chirality in Industry II: Developments in the Manufacture & Applications of Optically Active Compounds. Edited by A. N. Collins, G. N. Sheldrake, and J. Crosby. J. Wiley & Sons: New York. 1998. 389 pp. ISBN 0-471-98284-9.

Although the number of single enantiomer pharmaceuticals and agrochemicals on the market is small, this situation is changing rapidly. This book, taken along with its predecessor, covers a wide range of technologies for the production of single enantiomer products on an industrial scale. The book is divided into three sections, covering Physical Methods and Classical Resolution, Biological Methods and Chiral Pool Syntheses, and Asymmetric Synthesis by Chemical Methods. Each section contains several case histories, all of which are superbly written accounts in their own right. Coverage ranges from the rational design of resolution methods, crystal science techniques, membrane separations, biotransformations, the synthesis of enantiopure liquid crystals, and enantioselective protonation as well as the more familiar enantioselective ketone reduction, epoxidation, chiral pool, and chiral auxiliary methodologies. There is also a chapter on regulatory aspects of enantiopure drug production. The outstanding case histories in this book make it an invaluable read for anyone following a career in organic process research.

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Encyclopedia of Bioprocess Technology. Edited by Michael Flickinger and Stephen Drew. John Wiley: New York. 1999. Five-volume set. \$1750. ISBN 0-471-13822-3.

This five-volume set is one of four titles in the Wiley Biotechnology Encyclopedias series. (Other sets cover cell technology, molecular biology, and ethics and policy issues.) In the absence of any preface or introductory background, the subtitle "Fermentation, biocatalysis, and bioseparation" must suffice to explain this set's scope. About 400 contributors from industry and academia have authored brief articles that the publisher claims will provide "both depth and breadth of coverage" and focus on hands-on industrial practice.

Articles are arranged alphabetically by topic and are cross-referenced to each other. This browsing capability is important, because the index in Volume 5 is somewhat brief, and there is no table of contents. Each article includes a bibliography, but a number of those examined cite few papers later than the early 1990s. In a field as rapidly developing as biotechnology, this might cause a reader to question whether the "state of the art" is really represented here. Further suspicion arises from the realization that the very first article, on activated carbon, is reprinted verbatim from the 1992 edition of the *Kirk-Othmer Encyclopedia of Chemical Technology*.

These concerns aside, this encyclopedia may prove useful to students and nonspecialists needing background information on bioprocessing techniques.

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