Book Reviews

Theilheimer's Synthetic Methods of Organic Chemistry, Volume 54. Edited by Alan Fitch. Karger, Basel. 1998. xxiv + 301 pp. 16 x 23 cm. ISBN 3-8055-6696-4. $391.50.

The 54th volume of *Theilheimer's Synthetic Methods of Organic Chemistry* follows in the footsteps of its predecessors. It covers a 6-month period (the last 3 months of 1997 and the first 3 months of 1998). All reactions are divided into four categories, according to the bond being formed (addition, rearrangement, exchange, and elimination). Individual reactions are designated by a line notation developed by Dr. Theilheimer more than 50 years ago, which consists of the bond formed, the reaction category, and the bond broken (or element eliminated). For example, the addition of water to propene is designated by OC↓CC. Deoxygenation, formation of stable radicals, quaternizations, and certain rare reaction types are collected together at the end of the year book. There is a short but well-annotated section titled "Further Trends and Developments in Synthetic Organic Chemistry 1998". This covers many topics of current interest to the synthetic chemist (e.g., asymmetric synthesis, palladium-catalyzed syntheses, metathesis). There is extensive cross-referencing to previous volumes, a large body of supplementary information, and an extensive list of reviews in organic synthesis published in the time period covered.

The descriptions of reactions are concise and to the point, but they still provide enough detail to give the reader a sense of the reaction described and, in many cases, to run the experiment. Several abstracts refer the reader to related references for comparison. If one is interested in updating a file on a particular reaction, this text is the place to look. All of this is accomplished in a timely fashion (the book was published in the latter part of 1998).

Unfortunately, it is a rare occasion in which a scientist's interest in a reaction is limited to a 6-month period. In the era of desktop computer access to databases such as REACCS, Beilstein, SciFinder, etc., books such as *Theilheimer's Synthetic Methods of Organic Chemistry* represent somewhat of an artifact from the pre-PC age. Clearly the timeliness of *Theilheimer* benefits from the computerization of the chemical literature (such as REACCS which includes all of *Theilheimer's Synthetic Methods of Organic Chemistry*), but its circulation is limited by desktop access to the same programs. This fact, coupled with the $390 price tag, will likely limit the circulation of volume 54 of *Theilheimer* to library collections.

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Molecular Mechanics and Conformational Analysis in Drug Design. By G. M. Keseru and I. Kolossvary. Blackwell Science, Oxford, U.K. 1999. viii + 168 pp. 18 × 25 cm. ISBN 0-632-05289-9. £49.50.

The use of computational tools in drug design is widespread and growing. This book is a good introduction to two important computer-aided drug design methodologies: molecular mechanics and conformational analysis. The chapters are very well-organized, beginning with a general background on force fields that is appropriate for even nonspecialists. The next chapter nicely complements with a more in-depth treatment of most of the widely used approaches, such as MM2/3/4, AMBER, and OPLS. Parametrization of force fields is covered in the following chapter, along with a useful tutorial on generating parameters for a few specific examples. This is followed by a chapter on a topic currently receiving much needed attention: solvation effects. One key to the successful use of molecular mechanics to study energetics of molecules is the minimization technique employed. The authors provide a thorough treatment of several of the more useful minimization techniques in use today. Good coverage of an important topic in this arena, conformational analysis, is covered next, including a discussion on receptor−ligand complexes and docking.

The authors close with two applications-oriented chapters: binding free energy calculations and a case study involving cytochrome P450. The calculation of accurate binding free energies has proved to be a daunting task, and the authors provide a good discussion of the challenges in this area, including a more in-depth treatment of one particular method, named MINTA. The P450 case study is a useful account of the typical course of a conformational and energetics analysis using molecular mechanics methodology. The chapters are well-written and organized in a neat and consistent manner. The references are adequate and are fairly up to date. There is a detailed subject index (but no author index). In short, this monograph is a useful and very readable treatment of molecular mechanics and conformational analysis that can be enjoyed by both the casual user and the career specialist alike.

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Uses of Inorganic Chemistry in Medicine. Nicholas P. Farrell, Editor. Royal Society of Chemistry, Cambridge, U.K. 1999. xi + 159 pp. 16 × 24 cm. ISBN 0-85404-444-2. $59.50.

This is a timely review text of the role of inorganic molecules in modern medicine. Nine chapters present readers with a well-documented background to current topics in the field, each written by recognized experts in the areas. The reference sections at the end of each chapter are thorough and present literature through 1998.

Chapter 1 provides a general overview of topic coverage. Chapter 2 reviews biomedical uses for lithium compounds. Chapter 3 presents a very nice summary of gold complexes having anti-arthritic, anti-tumor, and anti-HIV activity and also describes in some detail the solution and coordination chemistry that underlies the behavior of these complexes. Chapter 4 updates readers on the chemistry of nitric oxide in physiology and medicine and also presents useful sections on the physical properties of NO and direct measurement of this species in solution. Chapter 5 discusses Mn-based superoxide dismutase mimics, while Chapter 6 covers the use of vanadium compounds as possible modifiers of insulin activity. Chapters 7 and 8 summarize the chemistry of cisplatin-based anticancer agents and the chemistry of newer dinuclear and trinuclear analogues. Finally, Chapter 9 overviews oxidation damage by bleomycin, adriamycin, and other cytotoxic agents that require iron or copper.

Overall, the text is adequately illustrated with black and white schematics and tables. While the subject index provides ready access to major topics, it might have been fleshed out to allow easier access to minor key words. The cost of the text should make it an attractive buy for students and advanced workers who require an overview of this exciting area of inorganic chemistry. Perhaps most importantly the text is sufficiently well-written that it might serve to fuel interest and encourage new workers to enter the field.

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Progress in Medicinal Chemistry. Volume 36. Edited by F. D. King and A. W. Oxford. Elsevier Science BV, Amsterdam. 1999. viii + 309 pp. 14.5 × 21.5 cm. ISBN 0-444-50090-1. $177.50.

This well-known series of pertinent reviews of advances in important areas of medicinal chemistry, founded by Dr. G. P. Ellis in 1961, is now being edited by a new team, Drs. F. D. King and A. W. Oxford. It is a special tribute to Dr. Ellis and his most recent coeditor, Prof. Lunscombe, that the consistently high standards for this series have been maintained in the present volume.

The six chapters presented in this volume review important current advances in medicinal chemistry. The first chapter describing the rational design of inhibitors of the influenza virus enzyme sialidase, from which zanamivir was identified, is representative of a new generation of agents for the treatment of human influenza infections. A chapter reviews small molecule fibrinogen antagonists. Clinical trials of these antithrombotic agents reveal encouraging results in agioplasty, in unstable angina, and in an adjunct role in thrombolysis therapy in myocardial infarction. Chapters on the application of combinatorial chemistry to therapeutically important targets and the use of molecularly imprinted polymers are also included in this volume. Novel anxiolytic drugs based on the pyrido[1,2-*a*]benzimidazoles are described. The final topic is a review of cyclooxygenase-2 (COX-2) inhibitors as non-steroidal anti-inflammatory drugs in arthritic disorders also having possible value in Alzheimer's disease. As in previous volumes, a subject index, a cumulative index of authors for volumes 1−36, and a cumulative subject index for volumes 1−36 are included.

It is unfortunate that the ever increasing price of these books precludes their purchase by many individual chemists. This volume should certainly take its place next to the previous volumes in this series in libraries devoted to medicinal chemistry and drug research.

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