

**The Practice of Medicinal Chemistry, Second Edition.** Edited by Camille George Wermuth (Université Louis Pasteur, Illkirch, France). Academic Press (an imprint of Elsevier): Amsterdam. 2003. xvi + 768 pp. \$174.95. ISBN 0-12-744481-5.

The successful practice of a scientific discipline requires a core set of knowledge and skills. These capabilities are initially obtained through formal education. The complete body of knowledge, though, is acquired through years of experience by working in the field. In this setting, the “tricks of the trade” are frequently shared and passed down from mentors and colleagues. *The Practice of Medicinal Chemistry*, now in its second edition, strives to be a repository for the “tricks” of the trade in medicinal chemistry and to make it easier for a young and well-trained organic chemist to enter the field. As such, it is a unique “how-to” book for practitioners of medicinal chemistry. This edition has been fully updated taking into account the advances in molecular biology, computing power, and genomics that have occurred in the nine years since the book first appeared and their impact on the field. Most practitioners in the field will find this a highly valuable reference book, which will not collect dust on the bookshelf.

The book consists of eight major sections that detail the process of taking a drug from the laboratory to the market including lead discovery, optimization strategies, pharmacokinetics, formulation, marketing, and patents. The individual sections are comprised of four to seven chapters written by a diverse group of experts representing a broad range of academic and industrial scientists. The chapters are well written, liberally sprinkled with classic as well as current examples, and appropriately referenced. The topics are timely and reflect a conscientious effort to update the original text. For example, the section devoted to “Lead Compound Discovery Strategies” includes chapters on natural products, combinatorial chemistry, molecular biology, database mining, and the resources available on the Internet. Although a minor point, the last three sections do not have section titles. In addition, the page number for the first chapter in each section does not correspond to the page number listed in the “Contents”. Given the price of the book, one expects a more carefully edited product.

The book offers something for everyone who works in the field. It fulfills its primary objective, which is to guide a young organic chemist at the beginning of his or her career in a pharmaceutical company. More senior industrial practitioners will find the discussions of pharmaceuticals and pharmacology useful along with the various strategies to identify new targets and optimize leads. Academic scientists will find the latter discussions helpful. For these reasons, the book is a worthwhile addition to a personal, company, or university library.

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**Handbook of Elemental Speciation: Techniques and Methodology.** Edited by Rita Cornelis (Ghent University), Editor-in-Chief, and by Associate Editors Joe Caruso (University of Cincinnati), Helen Crews (Central Science Laboratory, UK), and Klaus Heumann (Johannes Gutenberg-University, Mainz). John Wiley & Sons, Ltd.: Chichester. 2003. xii + 658 pp. \$260.00. ISBN 0-471-49214-0.

This book provides broad coverage of the different aspects of the analysis of elemental species and includes chapters on collection and storage of samples, their preparation, separation techniques, detection, direct speciation of solids, calibration, screening methods for semiquantitative speciation analysis, and risk assessments and regulations. A list of technical abbreviations and acronyms opens the book, and a substantial subject index concludes it.

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**Modern Phosphonate Chemistry.** By Philippe Savignac (Ecole Polytechnique, Palaiseau, France) and Bogdan Iorga (Institut de Chimie des Substances Naturelles, Gif sur Yvette, France). CRC Press LLC: Boca Raton, FL. 2003. xxii + 530 pp. \$199.95. ISBN 0-8493-1099-7.

Interest in phosphonates is driven by their value as synthetic intermediates and because of their potential for biological activity. This book focuses on the synthetic chemistry of phosphonates, especially as it is affected by nearby functionality. It is divided into eight chapters that are organized around the principal functional group that accompanies the phosphonate moiety in the individual classes of compounds. Each chapter begins with extensive information on methods for preparation of the functionalized phosphonates and is followed by key reactions conducted on these substrates. Literature coverage extends into 2002 and, as noted by the authors, was intended to give representative examples of early work and more comprehensive coverage of recent research. This was a wise choice given that even with this limitation the book includes more than 4000 references.

After a brief introduction, the book begins with fairly short chapters on alkynyl phosphonates and silyl phosphonates, followed by a longer chapter that recounts the chemistry of phosphonates bearing  $\alpha$ -halogens, and chapters on epoxy phosphonates and formyl phosphonates. The last three chapters cover cyano phosphonates, keto phosphonates, and phosphonate esters, all of which are well known as synthetic intermediates. Categories such as amino, hydroxyl, and vinyl phosphonates are not explicitly treated, although examples are occasionally observed as products of reactions involving the titled compounds or as intermediates leading to their preparation. Coverage of

the Horner–Wadsworth–Emmons condensation has been excluded, although the preface points the reader to a review on this topic.

The most dedicated specialists in phosphonate chemistry will recognize strong similarities between some individual chapters and earlier review articles written by these authors. For example, the chapter on epoxy phosphonates closely parallels an earlier review, although it has been updated by the addition of several pages of new material and references.

Interest in phosphonates has become widespread because of their utility in synthesis, and it has become routine to see complex targets assembled through sequences that involve a phosphonate reagent. At the same time, there is still abundant

room for growth, given that the most commonly employed phosphonate reagents are probably still simple derivatives of phosphono acetate. This book provides the information necessary to allow construction of far more complex phosphonate reagents. Thus, it should be of interest to any practitioner of organic synthesis and perhaps of greatest value to those who make only occasional use of phosphonate chemistry. Because the text is clearly written, thoroughly referenced, and very carefully produced, it will be of special worth to such users.

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