

# Book Reviews

**Fiesers' Reagents for Organic Synthesis, Vol. 19.** By Tse-Lok Ho (National Chiao Tung University, Republic of China). John Wiley & Sons, New York, NY. 1999. xiv + 488 pp. 15 × 22.5 cm. \$89.95. ISBN 0-471-32709-3.

Like the 18 volumes that precede this one, the contents of this book provide an excellent source of the newest and most significant reagents and reactions reported. This volume examines the literature from the period of 1995–1996. It contains information on hundreds of alphabetically arranged reagents, references, an author index, and a subject index. Extensive indexing and references make it very user-friendly to the practicing synthetic chemist. Moreover, each page includes multiple graphics illustrating the reactions and reagents presented in the text, which make this an interesting and pleasurable book to browse. This is an excellent resource for those practicing synthesis.

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**Scale-Up and Optimization in Preparative Chromatography, Chromatographic Science Series, Vol. 88.** Edited by A. Rathore and A. Velayudhan (Pharmacia and Oregon State University). Marcel Dekker, Inc., New York, NY. 2003. xiii + 342 pp. 6 × 9 in. \$150.00. ISBN 0-8247-0826-1.

Preparative chromatography is one of the most widely used chromatography techniques in the pharmaceutical and chemical industries. This volume fills an important niche in the field of separation science by updating what is now possible with the array of preparative chromatographic techniques at the disposal of a separation scientist. The book is divided into two parts, I and II.

Part I of the book contains six chapters. The first chapter provides an overview of scale-up in preparative chromatography. The chapter is written very clearly and covers the full breadth of preparative chromatographic topics, from simple quantitative approach to various practical aspects of scale-up. In the subsequent chapters, the other authors address the challenges faced in the design, development, and scale-up of large-scale preparative chromatography. They also offer a fundamental analysis of the underlying physicochemical principles to select optimal modes of interaction, design efficient separation, and increase productivity in the manufacture of therapeutics and pharmaceuticals. A full chapter is designated to simulated moving bed chromatography (SMB), which is a relatively new technology to the pharmaceutical industry, and its usefulness has yet to be established. The chapter describes the issues involved in designing and controlling SMB units.

Part II of this volume contains chapters on case studies related to the large-scale purification of a recombinant antibody fragment, plasmid DNA, an IgG<sub>1</sub> monoclonal antibody, a large-scale purification of a synthetic pharma-

ceutical intermediate, removal of hydrophobic impurities in altrafloxacin, and purification of a recombinant *E. coli* expressed protein. The volume provides examples of practical approaches to scale-up of purification taken in various industrial settings.

Most chapters in the book are appropriate, and with the exception of some typographical errors, are focused and clearly written. Interesting techniques and examples of actual processes are included that provide separation scientists a very powerful tool for process identification. Most importantly some economic consequences of the conditions under which a separation is carried out have also been discussed. The book provides important insights and considerations to ensure that a bench process merges well with the necessities of the pilot and manufacturing scales.

This book provides a useful summary of the methods and modern approaches in preparative chromatography. From the point of view of industrial process scientists who are involved in scale-up purification by preparative chromatography, this book will be a valuable reference.

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**Protein Physics.** By Alexei V. Finkelstein and Oleg B. Ptitsyn (Russian Academy of Sciences). Academic Press, Amsterdam. 2002. xvi + 354 pp. 6 × 9 in. \$80.00. ISBN 0-12-256781-1.

This book is a rigorous examination of the physics behind protein structure and function. The authors, in an unusual format, present their material as a series of lectures as if presented in a university setting (i.e., first-person narrative). They also use a literary conceit, “the inner voice”, to express differences in opinion between the two authors on various subjects. Though these style points are unusual for this type of book, the overall writing is excellent and the narrative engaging. The book is separated into seven sections. After a brief introduction, the authors thoroughly dissect the elementary interactions responsible for protein structure, including amino acid stereochemistry, chemical bond vibrations, van der Waals interactions, and the aqueous environment and its effects on electrostatic interactions. The authors then proceed to detail the physical basis for common protein secondary structures such as the  $\alpha$ -helix and the  $\beta$ -sheet and -turn, as well as the influence of amino acid side-chains. Part IV of this book is separated into several lectures, each describing particular tertiary protein structural classes (globular proteins, fibrous proteins, membrane proteins). Additional sections detail the molecular basis for protein transitions, such as protein folding and denaturation and the prediction and design of protein structures. The final series of lectures is on “Physical Background of Protein Function”. This section was one of the most interesting in that it describes the structural basis for the functions of several classes of proteins. Protein

function is described as an accident of structure, such that active sites on enzymes are viewed as "structural defects".

This book is very useful for those familiar with some aspects of the subject matter, but could be somewhat difficult for the novice. The authors, acknowledged experts in the field, present many mathematical models of protein physics; therefore, a good background in physics is very helpful to one's enjoyment of the material. I would recommend this book for those interested in learning more about the physical basis for protein structure and function, especially as an adjunct to a course on biophysical protein chemistry. It will also be an excellent library resource for those interested in better understanding their protein of interest.

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**Potter's Herbal Cyclopaedia.** By Elizabeth M. Williamson (University of London). C. W. Daniel Company Ltd., Essex, UK. 2003. xxii + 505 pp. 16.5 × 24 cm. \$39.95. ISBN 0-85207-3615.

The latest of the Potter tomes to come out of England is brimming with arcane information on the ancient use of wolfsbane; the dark properties of hellebore, hemlock, and henbane; and the modern-day wizardry of phytochemistry.

This volume does not, of course, originate in the exploits of student wizard Harry Potter, but is rather the latest output of an enterprise begun by one Henry Potter, who set up his first herbal shop in London in 1812. This book is the 19th edition of the work initially titled *Potter's New Cyclopaedia of Botanical Drugs and Preparations* and has been thoroughly updated from the diverse scientific literature on herbal medicine by Elizabeth Williamson of the University of London School of Pharmacy.

As befits a work that first appeared nearly a century ago, the *Cyclopaedia* gives a brief background on the historical uses of the herbs it contains and Biblical references where pertinent. It also sets out the plant habitat, description, English common and (properly cited) scientific names, synonyms (English and occasionally transliterated from other languages as well as taxonomic synonyms), regulatory status where applicable, and plant parts used. Paragraph-long sections describe chemical constituents and medical uses, and each herb has basic and very current citations to the scientific literature as well as reputable secondary sources. Dosages are given for herbs widely used in phytotherapy, and availability of standardized extracts is noted. The text, including the Latin binomials, is blessedly lacking in orthographic errors.

Discussions of medical uses are appropriate and up-to-date. Items such as hepatotoxicity associated with kava, drug interactions of St. John's wort, and the use of ephedra for weight loss are mentioned and appropriately and briefly evaluated. Including over 700 herbs in all, the volume features in-depth coverage of the European herbal pharmacopoeia; some herbs from African, Ayurvedic, and Chinese traditional medicine have also been added, as practitioners are growing more likely to encounter these. It is somewhat disconcerting for the U.S. reader to read in the treatments of some of the more toxic herbs that they should be used under medical supervision if at all, given

the dearth of trained phytotherapists in this country and the disinterest of the medical profession in herbs.

This volume would be very useful for the researcher or health practitioner who may occasionally need some background on an herb with which they are unfamiliar, a quick route into relevant literature for a slightly better-known herb, or a speedy check for toxicity.

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**Flax, The Genus *Linum*.** Edited by Alostair D. Muir and Neil D. Westcott (Agriculture and Agri-food Canada, Saskatoon). Taylor & Francis, London. 2003. xii + 307 pp. 7 × 10 cm. \$135.00. ISBN 0-415-30807-0.

This is another book in a series entitled "Medicinal and Aromatic Plants-Industrial Profile", contributed by various authors. Each volume in this series is dedicated to a particular plant. This volume covers flax (*Linum* spp.) and consists of 16 chapters, starting with an introduction that sheds light on historical aspects of flax and concluding with a chapter describing the regulatory status of flaxseed and its products in different countries.

The intervening chapters provide information on agronomy, botany, chemistry, clinical studies, marketing, metabolism, pharmacology, plant diseases, and geographical distribution in historic as well as present terms. Separate chapters describe in detail the roles of flax seed compounds in the prevention of cancer and of alpha-linolenic acid derived from flax for general human health and in the prevention of cardiovascular diseases. There is a separate chapter on mammalian metabolism of flax lignans. This book also provides information about the current trends and economic importance of flax oilseed.

All the chapters in this book are well organized and complementary to one another. I would highly recommend this book to be added to the reference section of libraries and personal libraries, and also for those who are involved in research related to dietary supplements.

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**Cannabis Therapeutics in HIV/AIDS.** Edited by Ethan Russo (Montana Neurobehavioral Specialists). Haworth Press, Inc., New York. 2001. xiv + 230 pp. 6 × 8<sup>1</sup>/<sub>4</sub> in. \$39.95 (softbound). ISBN 0-7890-1698-2.

Whether or not cannabis (marijuana) should be used medicinally is a controversial issue filled with emotion in the press and in the courts. Russo's book sets out to explore the science behind the use of cannabis for those with HIV/AIDS, but even a scientific approach to the subject cannot escape the politics. Actually, the combination of background information regarding the political climate and the science is what I find fascinating about Russo's book.

This book is a compilation of chapters written by different authors covering various aspects of the use of cannabis by HIV-positive or AIDS patients. Following an introduction by Russo, there are 12 additional chapters. The book starts off with a chapter by Richard Bayer, MD, that provides background on the AIDS epidemic. He sets the stage for the rest of the book with the explanation that the nausea and anorexia caused by the new AIDS treatments prompted the use of cannabis in order to ameliorate these side effects. Dr. Bayer also profiles the development of synthetic THC (dronabinol or Marinol), which provided positive weight gain to patients. He and other authors compare oral administration of the synthetic THC to smoking of a cannabis cigarette. Perhaps not surprising, the cigarette is felt to have many benefits over its rival, as the speed of relief is quicker and the dose is more easily controlled.

Clinton Werner covers the political background of the emergence of the AIDS epidemic and initial lack of remedies. In a fascinating story, he covers the politicization of the AIDS population and their demand that cannabis be studied in government-sponsored clinical studies.

Two surveys of cannabis use by HIV-positive and AIDS patients are included in Russo's book. Stephen Sidney, MD, covers a mail survey of members of the Kaiser Permanente Medical Care Program in Northern California. Interestingly, politics raises its head here, too, as most patients in this survey received their supply from cannabis "Buyers Clubs" despite efforts by the federal government to shut these clubs down. Valerie Corral, a member of a grass-roots organization called the Wo/Mens Alliance for Medical Marijuana, also documents her survey. I found Ms. Corral's survey to be annoying, due to lack of scientific quality,

mostly in a lack of clarity in identifying two species she claims to be *C. indica* and *C. sativa*.

Guy Cabral, PhD, and Donald Tashkin, MD, in separate chapters, examine the possible adverse effects of smoking cannabis, including indications of immunosuppression and damage to the respiratory system due to tars. Details of the biochemical and physiological effects of various compounds identified in cannabis are presented by John McPartland, DO, and Ethan Russo, MD. Pros and cons of various possible routes of administration, including oral, smoking, rectal, sublingual, and transdermal, are covered by Franjo Grotenhermen. The THC and tar content of cannabis administered via vaporization is compared to that from smoking by Dale Gieringer, PhD. Susan Broom and others report on their experiments with analgesic effects in rats. Finally Brian Whittle and colleagues discuss the possibilities for cannabis products as prescription medications.

I recommend this book for anyone interested in the background of the political struggle to research cannabis and an introduction to the science behind its use to treat the nausea, weight loss, pain, and depression associated with HIV, AIDS, and its treatment.

Note: The text of this book was simultaneously published in the *Journal of Cannabis Therapeutics*, Volume 1, Numbers 3/4, 2001.

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