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*Book Reviews**

Intellectual Property Management: A Guide for Scientists, Engineers, Financiers, and Managers. By Claas Junghans, Adam Levy, Rolf Sander, and Tobias Boeckh. Wiley-VCH Verlag GmbH: Weinheim. 2006. 170 + xviii pp. Euro 49.90. ISBN 3-527-31286-2.

This is a useful small volume that covers IP issues from a business/economic perspective and includes major chapters on patenting, ownership, trademarks and designs, and licensing, as well as unexpected chapters on "starting up and financing your venture" and "the importance of business structures to the exploitation of IP".

Scientists will find the book a good introduction to the subject, but the lack of detailed examples and case studies means that it is hard to relate the general statements to actual practice. Process chemists will find little of relevance to the subject of process patents and their importance in the chemicals and pharmaceuticals business areas.

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March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, 6th ed. By Michael B. Smith and Jerry March. Wiley Interscience: New York. 2007. 2357 + xx pp. £58.95 (hardback). ISBN 13 978-0-471-72091-1, ISBN 10 0-471-72091-7.

Jerry March's book has always been a popular reference work for industrial chemists, mainly because of its comprehensive nature, its excellent references and easy-to-use indexes, and its tremendous value for the money. It is easy to find your way around when you want to look something up. Since the death of Professor March, Michael B. Smith has taken on the mammoth task of updating and revising "March" and the fifth edition was well-received by process chemists. A few years later, it has been necessary for Professor Smith to produce the sixth updated and expanded edition. He had added over 7000 new references (up to 2005) and has added new sections as well as revising the old ones.

Needless to say, this outstanding work has been further improved and should be on the personal book shelf of every organic chemist. With over 10,000 references to the original literature, it should yield key references to a particular section almost as quickly as a Google search, but with more specificity.

The only question is, with over 2300 pages in a single volume, will the binding hold together after years of constant use? Perhaps the publishers may need to think of a two-volume work for the seventh edition in a few year's time.

If you need only one book on organic chemistry, then this has to be the first choice. It is still the best value textbook on the market. Just buy it!

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Common Fragrance and Flavor Materials: Preparation, Properties and Uses, 5th ed. By Horst Surburg and Johannes Panten. Wiley-VCH Verlag GmbH: Weinheim. 2006. 318 + xii pp. Euro 139.00. ISBN 3-527-31315-X.

The conception of this book approximately 20 years ago by Kurt Bauer and Dorothea Garbe of the Haarman and Reimer company in Germany was of an encyclopaedic work that would be readable and readily accessible. Since the first edition, its popularity has ensured that it has become the most cited standard work in the field of the chemistry of fragrances and flavours. It has been necessary to repeatedly update the information in a timely manner, and the fifth completely revised and enlarged edition, written by workers at Symrise (formed by the merger of Haarman and Reimer with Dragoco), continues the trend and remains a high quality work.

After a brief introduction, the individual fragrance and flavour chemicals are discussed under section headings familiar to the organic chemist (aliphatic compounds, acyclic terpenes, cyclic terpenes, other cycloaliphatic compounds, aromatic compounds, phenols and phenol derivatives, and heterocycles). These sections comprise 170 pages, and the preparation and properties of hundreds of compounds are described in an easy-to-read style.

Chapter 3 discusses natural raw materials in the industry including isolation methods, followed by an extensive survey of those materials. Later chapters cover quality control and analysis, safety, and legal aspects. Extensive indexes and reference lists complete this excellent work.

In conclusion, this work is highly recommended to all readers as a source of valuable information.

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Organic Synthesis – State of the Art 2003–2005. By Douglass F. Taber. Wiley-Interscience: New York. 2006. 216 pp. $99.95. ISBN 0-470-05331-3.

The author has been publishing a weekly Organic Highlights column (available on www.organic-chemistry.org)

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since January, 2003, and this book is a collection of the highlights for a 3-year period, 103 in total. Each highlight does not just cover a single paper but is a more detailed study of a particular topic and may have papers from 6 months previously.

Approximately one quarter of the highlights are devoted to a total synthesis, with the emphasis on those which have used new strategies or invented new reactions or conditions.

The volume contains a subject index, which could have been a little more comprehensive, and an author index to help locate each highlight. The index is a guide to the author's selections, for example, the Grubbs metathesis reaction has over 40 citations in the index and is clearly a favourite reaction of the author.

The book makes most interesting browsing–definitely a book to take on a long international flight to catch up on papers you may have missed.

I look forward to the next edition for the years 2006–2008 and will now be reminded to look at the highlights website more often.

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The Art of Drug Synthesis. By Douglas S. Johnson and Jie Jack Li. Wiley-Interscience: New York. 2007. 276 pp. £50.50, $89.95. ISBN978-0-471-75215-8.

The previous book by the same two authors (and colleagues from Pfizer), *Contemporary Drug Synthesis*, published in 2004, was highly recommended to readers of *Org. Process. Res. Dev.* The new book has the same format. Each chapter covers the synthesis of a single drug or a series of related drugs, discussing the literature (including patents) and how different synthetic routes have been used in discovery and, to a lesser extent, in manufacture.

The new book now describes the synthesis of a different set of drugs. In *The Art of Drug Synthesis*, the editors have brought in researchers from companies other than Pfizer to discuss the following drugs; aromatase inhibitors (Aromasin, Arimidex and Femara); quinolone antibiotics (various floxacins); triazole antifungals (itraconazole, fluconazole, voriconazole and fosfluconazole); non-nucleoside reverse transcriptase inhibitors; neuraminidase inhibitors (oseltamivir phosphate and zanamivir); PPAR agonists for type 2 diabetes; AT antagonists for hypertension (sartans); ACE inhibitors for hypertension (the 'prils); calcium channel blockers (Nifedipine, Felodipine, Amlodipine, and Azelnidipine); second-generation HMG-CoA reductase inhibitors (Fluvastatin, Rosuvastatin, pitavastatin); cholesterol absorption inhibitors (Ezetimibe); SSNRIs for depression (Venlafaxine, Milnacipran, Duloxetine); $GABA_A$ receptor agonists for insomnia (zolpidem, zaleplon, eszopiclone and indiplon); $\alpha_2 \delta$ ligands (gabapentine, pregabalin) and treatments for attention deficit hyperactivity disorder (amphetamine, methylphenidate and atomoxetine).

Each chapter discusses, in an introductory section, the medicinal chemistry of the drug or series before focussing on the synthesis, beginning with the discovery route. Later process routes are also discussed, although in some chapters it is unclear which routes have been scaled up, and in most it is difficult to ascertain what the manufacturing route is. Nevertheless, all organic chemists will benefit from perusing the chapters, which make fascinating reading. Whereas *Contemporary Drug Synthesis* launched straight into the drug synthesis chapters, *The Art of Drug Synthesis* has two introductory chapters. The Role of Medicinal Chemistry in Drug Discovery (John A. Lowe, Pfizer) briefly discusses the tools of medicinal chemistry and the role of synthetic chemistry in drug discovery. The second chapter (Process Research: How much; How soon? by Neal G. Anderson) discusses scale-up issues, including workups and product isolations, and the importance of physical form, with only a couple of pages on route design and process optimisation to minimise cost of goods. I thought there could have been more emphasis in this chapter on the differences between discovery synthetic routes and the routes chosen for manufacture. As a result this chapter feels a little out of place in the book.

Overall, this volume is highly recommended. Although at 276 pages the book seems only slightly larger than *Contemporary Drug Synthesis* (221 pp), the new and improved publishing format (CDS looked like a photocopied manuscript!) means there is so much more in the new volume. Since the price is approximately the same as the 2004 work, it represents much better value for money. References are up to 2006 with an occasional 2007 reference. The editors and authors are commended in producing such an up-to-date book, and the publishers have done an excellent job in bringing a high quality product to market so quickly! Whereas most authors have tended to put the reference after the citation (as the non-ACS format of name/year rather than number, e.g., Dooley et al., 2000), one or two chapter authors have simply listed the references at the start of each section. As a result, it is not easy to know which reference refers to which synthesis. However, this does not change my overall recommendation that *The Art of Drug Synthesis* should be read by all academic and industrial chemists, whether in discovery, process chemistry or manufacture. Chemists in the generic drug's industry will love it!

The authors may be running out of classes of drugs for a third volume. I suggest they could revise and update some of the drugs from the first volume, incorporating more synthesis from patents from generic companies, possibly getting authors from those generics to write chapters.

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Industrial Biotransformations, 2nd Completely Revised and Extended Edition. A. Liese, K. Seelbach, and C. Wandrey, Eds. Wiley-VCH: Weinheim. 2006. 556 + xiv pp. £149.00. ISBN 3-527-31001-0.

The first edition (2000) of this excellent book was well-received by industrial scientists and engineers. Now the

authors have completely revised and updated the contents to try to provide a comprehensive picture of the state of industrial biocatalysis. The key chapter, simply entitled "Processes", has now been enlarged by 20% compared to the first edition and now runs to more than 350 pages. Each biotransformation is described in abbreviated format in industrial terms with emphasis on reaction conditions, efficiency, scale-up, equipment, and space-time-yield, as well as key references to the literature. So the volume is an important work of reference, trying to be encyclopaedic and also covering patents as well as academic literature. The book is worth the price for this chapter alone.

In addition, there are new chapters on "Retrosynthetic Biocatalysis", which will appeal to organic chemists and should be part of the undergraduate organic syllabus in universities, and "Optimisation of Industrial Enzymes by Molecular Engineering", which surveys the progress made in evolving enzymes for particular reactions.

Chapters retained but updated from the first edition include "Enzyme Classification" and "Basics of Bioreaction Engineering". The indexes are, as before, very well prepared and comprehensive at 35 pages.

In summary, the second edition is once again highly recommended to all process chemists and engineers who are interested in biotransformations and their translation to efficient industrial processes.

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Enantioselective Organocatalysis: Reactions and Experimental Procedures. Edited by Peter I. Dalko. Wiley-VCH: Weinheim. 2007. 536 + xxiii pp. $190.00. ISBN 978-3-527-31522-2.

Organocatalysis is a hot topic at present. So the appearance of a second book, which complements Bergkessel/Groger's excellent volume *Asymmetric Organocatalysis* (2005, VCH), is timely. In contrast to the earlier book, this new work is multiauthored, with most of the top names in the field (MacMillan, Barbas, Enders, Jorgensen, Maruoka, Aggarwal, etc.) contributing chapters or parts of chapters.

After an initial short introductory chapter by the editor, chapters on enamine catalysis, iminium catalysis, ammonium ions as chiral templates, asymmetric proton catalysis, chiral Lewis bases as catalysts, and asymmetric acyl transfer reactions describe the scope and reactions with some mechanistic analysis. These chapters focus on the effect of catalyst structure on the selectivity of the reaction.

Somewhat out of place is a chapter on a single reaction or group of reactions, the Morita–Baylis–Hillman (MBH) reaction, but this is an excellent up-to-date review of the topic with the latest thoughts on the mechanism of this useful and intriguing process.

Additional chapters include "Nucleophilic N-Heterocyclic Carbenes in Asymmetric Organocatalysis", "Ylide-Based Reactions", "Organocatalytic Enantioselective Reduction of Olefins, Ketones and Imines" (the latter by Prof .Henri Kagan), "Oxidation Reactions" (Armstrong), and "Shape and Site-Selective Asymmetric Reactions".

A useful Appendix giving 60 pages of experimental procedures is followed by an unusual Appendix of catalyst structures, which refers the reader back to chapters where the individual catalysts are used; a rather sparse (6 pp) index completes the work.

In general, these are very readable reviews and are relatively up-to-date in this fast-moving subject (references are to mid-2006). The editor is to be congratulated on first of all persuading so many leading workers in the field to contribute to the book but also in ensuring that there is minimal overlap on the contents of the chapters. The chapters are of a consistently high standard.

In conclusion, this multiauthor work is highly recommended to all organic chemists, whether in industry or academia.

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