Heterocycles in Natural Product Synthesis

Modern synthetic organic chemistry owes much to heterocycle-containing natural products. Indeed, work over a hundred years ago to structurally characterize such materials through degradative chemistry provided much of the foundation for reactivity principles that we largely take for granted today, while efforts to actually synthesize those materials from scratch have resulted in dozens of highly creative approaches and methods to access each type of ring system. And, given their bioactivity, many modern pharmaceuticals either are, or derive from, such materials. Thus, it is surprising that no major text has yet attempted to use natural products chemistry as a means to codify the diverse chemistry of heterocycles.

This volume, edited by Krishna Majumdar and Shital Chattopadhyay, is the first to attempt to fill this niche. Organized across 16 chapters by ring system, covering major players as well as few that may be underappreciated, such as aziridines and macrocycle-containing heterocycles, each entry provides clear information about what is known regarding each within the context of natural products chemistry. Most chapters open with a tabular collation of all the targets that are discussed, highlighting each molecule's biological profile, source of isolation, and most significant physical properties. What this unique presentation accomplished for this reviewer was some insights into the breadth of organisms that produce certain ring systems while others are far more specialized/specific. It also sets the stage for the main component of each chapter: the way in which each heterocycle has been synthesized in diverse natural product targets. Given the wealth of methods for making any individual ring system, herein rests the true educational value of the text. By highlighting the success of a given method within truly complex contexts, the reader can begin to appreciate and discern between the multiple approaches possible and identify those with the greatest chance of success in his/her own unique applications.

As such, this book is certain to have value to scientists in multiple fields, from natural product synthesis chemists to researchers in the pharmaceutical industry, and this reviewer is glad that these editors and all the contributing authors devoted time to creating such an important text. Hopefully, this edition will be followed up with an additional version in a few years, including updates to each chapter in terms of new molecules that have been prepared and new synthesis methods, as well as an even stronger specific focus on highlighting which heterocycle synthesis methods are truly empowering in complex contexts versus other alternatives. With ever increasing pressure to make molecules more quickly and efficiently, such knowledge is sure to hasten the speed with which such materials can be both prepared and analyzed.

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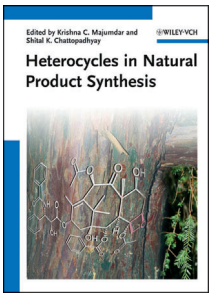
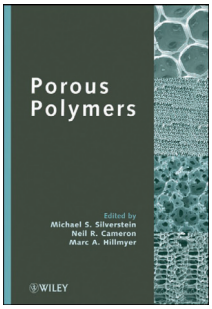


Heterocycles in Natural Product Synthesis
Edited by Krishna C. Majumdar and Shital K. Chattopadhyay. Wiley-VCH, Weinheim, 2011. 638 pp., hardcover, € 159.00.—ISBN 978-3527327065

Porous Polymers

This book discusses a broad subject—porous polymers—that spans topics ranging from catalyst supports to scaffolds for tissue engineering. It is divided into three sections covering synthesis, characterization, and applications. A danger in a broad book like this is that it attempts to cover everything at a low level, and ends up offering little to either the specialist or the more general reader. The editors, Silverstein, Cameron, and Hillmyer, have avoided this here, partly through skillful choice in the balance of material, and partly by involving contributors (31 in total) who are at the leading edge of their subjects. The result is an excellent book which is comprehensive in scope but which also offers new insights and information regarding rather specific areas. The book should serve well as the standard introduction to this field. Some of the topics covered, such as microscopy for porous polymers (Chapter 7), are sufficiently general that it can be hard to find concise accounts in specific reviews. Indeed, although most of the topics in the book have been reviewed separately in some form, it is rare to find these three aspects—synthesis, characterization, and applications—pulled together in a single source.

Section 1 discusses porous polymer synthesis, and is broadly arranged in order of ascending length scales, from microporous polymers (pores smaller than 2 nm; Chapter 1) through to mesoporous and macroporous polymers (Chapters 2–4). All of the areas covered in this section, such as polymers of intrinsic microporosity, block-copolymer-templated materials, freeze-aligned porous polymers, and emulsion-templated structures, such as polyHIPEs, are "hot topics" in materials chemistry and are covered by acknowledged practicing experts. While Section 1 focuses on synthesis, it is



Porous Polymers
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