Book Review

Catalysts for Fine Chemical Synthesis, Volume 3: Metal Catalysed Carbon-Carbon Bond-Forming Reactions Edited by Stanley M. Roberts, Jianliang Xiao (University of Liverpool), John Whittall, and Tom E. Pickett (The Heath, Runcorn Stylacats Ltd, U.K.). John Wiley and Sons, Ltd.: Chichester. 2004. xxiv + 256 pp. $180.00. ISBN 0-470-86199-1.

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BOOK REVIEWS

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This reference provides detailed information for the preparation and use of relevant catalysts for the formation of carbon−carbon bonds. The first chapter is an overview of the use of catalysts in industrial synthesis of fine chemicals, and the remaining 11 chapters cover a selection of carbon−carbon bond-forming reactions, such as alkylation of aldehydes and ketones, Suzuki coupling reactions, and olefin metathesis reactions, to name a few. Each chapter presents a brief description of the reaction, its chemical equation, a list of materials and equipment necessary for carrying out the reaction, a step-by-step outline of the procedure, and references. Practical hints, tips, and comments are included where appropriate. Lists of abbreviations and of chemical names used are provided at the beginning of the book, and a subject index completes it.

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Natural Product Synthesis II: Targets, Methods, Concepts. Topics in Current Chemistry, 244. Edited by Johann Mulzer (Universität Wien). Springer: Berlin, Heidelberg, New York. 2005. x + 270 pp. $219.00. ISBN 3-540-21124-1.

This book, which is the second of a two-part review (Vol. 243 is Part 1) of natural product synthesis, consists of six chapters, all of which are well-written, timely, and comprehensive reviews of their subjects and cover the literature up to about 2003 (there are a few references from early 2004). These excellent review articles are ideal starting points for anyone initiating research in these areas and provide a useful summary of recent progress for those who are already familiar with the topics. A sample (10−15%) of the references in each chapter was checked for accuracy and found to be generally accurate; only a few significant errors (incorrect page number or journal) were found.

The first chapter by Heckrodt and Mulzer is a review of the literature on marine natural products from *Pseudoterogorgia elisabethiae*, wherein the natural occurrence, isolation, elucidation of structure, biosynthesis, biological activity, and synthesis of these interesting natural products are discussed. In the second chapter, Kalesse covers vinylogous aldol reactions and their applications in syntheses of natural products. General methods such as enolate activation and aldehyde activation that are used to facilitate this reaction are discussed, and various approaches that have been reported for each of these methods are covered. Representative examples of their use in the synthesis of complex natural products are also given.

Beifuss and Tietze review biologically active phenazines with special emphasis on methanophenazines in Chapter 3. In addition to describing synthetic aspects, the authors also discuss the biological role of these compounds in methanogenesis and metabolism. In the following chapter, Knolker covers the occurrence, biological activity, and synthesis of carbazole alkaloids by convergent organometallic synthesis. Iron-, molybdenum-, and palladium-mediated approaches are discussed, and the scope and limitations of each method are extensively reviewed, making this chapter a useful addition to the literature on alkaloid synthesis.

The final two chapters are reviews of recent advances in charge-accelerated aza-Claisen rearrangements and synthetic studies of the pamamycin macrodiolides, respectively. In the former, Nubbemeyer nicely summarizes recent advances in the area and discusses the need for further study, particularly in the area of stereoselectivity. In the latter, Metz provides a comprehensive but concise review of this relatively new family of natural products that has generated considerable interest among synthetic chemists.

The book includes a subject index for this volume as well as an author index for Volumes 201−244 of the series. Surprisingly, there is no subject index for the earlier volumes, even though this would be considerably more useful than an author index, in my opinion.

Overall, this volume provides nice overviews of several interesting topics in the field of natural product synthesis. The editor has done an excellent job of ensuring consistency and high quality in all of the chapters. This book should be of interest to anyone involved in the synthesis of natural products, although it should be most useful to those working specifically in the areas reviewed in the book. While the high cost of the book may preclude its purchase by most individuals, it should be a part of any comprehensive institutional collection.

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