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BOOK REVIEWS

Ionic and Organometallic-Catalyzed Organosilane Reductions. By Gerald L. Larson (Gelest, Inc., Morrisville, PA) and James L. Fry (Fort Collins, CO). John Wiley & Sons, Inc.: Hoboken, NJ. 2009. x + 756 pp. $99.95. ISBN 978-0-470-54787-8.

This book is a soft cover version of *Organic Reactions, Vol 71*, brought up to date with additional references. The book contains a small section on mechanisms, a good discussion of scope and limitations, a number of experimental procedures, and extensive tables. This is the third volume that *Organic Reactions* has reissued in soft cover format to make some of these volumes more affordable to the organic chemistry community.

The original volume (a single chapter) covered the literature on organosilane reductions through 2004. The current edition has an additional nine pages of references (2005−2009) and a ten-page index, which covers the text, but not the tables. The additional references are sorted by topic, e.g., recent reviews and supplemental references for most of the tables. The original text and tables are unchanged.

This is an impressive piece of work. Organosilanes have been used for the reduction of a large variety of types of compounds. The Table of Contents is very detailed with respect to starting substrate for the reduction. In the case of aldehydes and ketones, it is further subdivided according to product. There are a large number of examples of reductions of various types of carbonyl compounds and α,β-unsaturated carbonyl compounds, as well as reductions of many other groups including alkenes, ethers, alcohols, halides, various nitrogen compounds, and a few organosulfur compounds (no phosphorus compounds). Separate sections and tables on various asymmetric reductions are also included. In addition to reductions, there are a few C−C bond forming reactions included. One of the few examples that were not easy to find were reductions of epoxides. Epoxides and aziridines are listed in the Table of Contents under "Reduction of Small- Ring Heterocycles", and examples are listed in Table 28. The section on the reduction of ethers does not include epoxides. Epoxides and aziridines are not listed in the index, but an index entry for oxirane does lead to an experimental procedure.

There is a brief section on alternative methods, which focuses on asymmetric hydrogenation but does not cover other reducing agents, such as metal hydrides, which have been reviewed elsewhere.

This is a well-written summary of a large and active area of research. Even though organosilane reductions have been used in a very large number of publications, synthetic organic chemists would do well to make more use of these versatile reactions. Organosilanes are for the most part easy to handle, and as pointed out in the Foreword by Scott Denmark, the oxidized organosilane byproducts are easily removed and nontoxic. This book will be useful to a variety of synthetic organic chemists and organosilicon chemists.

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Comprehensive Natural Products II: Chemistry and Biology, Volumes 1−10. Edited by Lewis Mander (Australian National University) and Hung-Wen Liu (University of Texas at Austin). Elsevier: Amsterdam. 2010. 7388 pp. $3950.00. ISBN 978-0-08-045381-1.

This 10-volume set was designed to bring together the disciplines of chemistry and biology to the general field of natural products to inform the reader of the latest research at this interface as it affects, for example, human health and medicine, as well as to identify future trends in this particular field. There are over 400 authors and an additional volume on modern methods in this edition. The titles of the volumes, each featuring different editors, are as follows: (1) Natural Products Structural Diversity-I Secondary Metabolites: Organization and Biosynthesis; (2) Natural Products Structural Diversity-II Secondary Metabolites: Sources, Structures and Chemical Biology; (3) Development and Modification of Bioactivity; (4) Chemical Ecology; (5) Amino Acids, Peptides and Proteins; (6) Carbohydrates, Nucleosides and Nucleic Acids; (7) Cofactors; (8) Enzymes and Enzyme Mechanisms; and (9) Modern Methods for the Investigation of Natural Products. The final volume is an index for the set.

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Fullerene Polymers: Synthesis, Properties and Applications. Edited by Nazario Martin (Universidad Complutense, Madrid, Spain) and Francesco Giacalone (Università Degli Studi di Palermo, Italy). WILEY-VCH Verlag GmbH & Co. KGaA: Weinheim. 2009. xviii + 312 pp. $180. ISBN 978-3-527-32282-4.

The intersection of the relatively new field of fullerenes and the well-established field of macromolecules is now the scene of rather intense research activity because of the possibility of utilizing the unique properties of fullerenes in solid-state applications, as well as in solution. Macromolecular scaffolding renders the fullerenes more soluble and processable and in many cases enables improved properties to be achieved. Therefore, this book is timely.

The volume is designed with the aim of providing overviews and highlights in several topical areas; it does not claim to provide an exhaustive or comprehensive critical review of the field of fullerene polymers. It consists of 12 chapters, contributed by well-known practicing experts, on the following topics: an overview of the field, a general discussion of main-chain and

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side-chain polyfullerenes, and coverage of acrylate and methacrylate end-caped polymers; semi-interpenetrating networks based on aggregation of polymers with terminal C_{60} units; fullerene-cored stars; helical polyfullerenes; electroactive C_{60} polymers; polyfullerenes in solar cells; supramolecular fullerene polymers; fullerene dendrons and dendrimers; liquid crystalline fullerene-containing dendrimers; and polymer-derivatized carbon nanotubes.

Overall the editors achieve their primary aim: "to highlight and update the most recent advances on the topic". The references at the ends of the chapters provide 36 to 124 citations each from the primary literature, although, of the 961 total citations, many are duplicates. The latest references are from 2008. The book is well produced in the typical Wiley-VCH style; i.e., the fonts are crisp, no typographical errors were detected, and the structures are clear. Remarkably, in view of the large number of complicated chemical structures presented, only a couple of errors were noted; e.g., in Chapter 3, Scheme 3.5, there was no charge on sulfonate, and in Chapter 8, peroxide linkages were erroneously indicated in Structure 6.

I do have some criticisms. First of all, the title is misleading: almost all of the examples deal with C_{60}, although there are a couple of references to C_{70} and the last chapter deals with nanotubes. As with most multiauthor volumes, the quality of the chapters is uneven. Because none of the authors are native English speakers, in some cases the language is not smooth; however, the technical messages are clear and some of the chapters are outstandingly good. Also, as is inevitable in such multiauthor volumes, there is some overlap among the various chapters, especially Chapters 5, 7, and 8.

Overall this volume is a must-have for anyone already involved with the study of fullerenes or contemplating venturing into this field. For polymer scientists with even a casual interest in electroactive or composite applications, this book reveals the surprisingly large amount of high quality research that has already been carried out. It provides an expert's view into several relevant subtopics, while providing a solid overview of a field that will no doubt become increasingly important in terms of development of applications of fullerenes and derived materials.

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