

Book Reviews *

Organozinc Reagents—A Practical Approach. Edited by P. Knochel and P. Jones. Oxford University Press: Oxford, UK. 1999. 354 pp. £75.00. ISBN 0 19 850121 8.

The Practical Approach in Chemistry Series is an excellent series of books for the process R&D and production chemist. The latest volume on organozinc reagents continues the high standard and focuses clearly on practical issues—more than half the volume is concerned with detailed experimental protocols including important tips, essential for reproducible (and safe!) reactions.

The editors, well known for their recent contributions to organozinc chemistry, are based at Phillips University in Marburg; this is appropriate since the first organozinc reagent was discovered at that university by Frankland in 1849. With 150 years of organozinc chemistry and particularly the advances in the last two decades in carbon—carbon bond-forming reactions, one would have expected more large-scale industrial processes, especially since zinc is a relatively inexpensive and nontoxic metal. I suspect that, although there have been some successful scale-ups of Simmons—Smith and Reformatsky reactions, there have also been reports of “unreliability” and one report of a runaway reaction during a multikilogram-scale cyclopropanation process. The detailed discussions and emphasis on practical protocols in this book may help process chemists to overcome these difficulties, and I highly recommend this volume to all practising chemists.

Each chapter is written by an expert in the field and includes methods for activating zinc, cyclopropanation, transition-metal-catalysed processes, use in asymmetric synthesis, Reformatsky and Barbier reactions, organozincates, and bimetallic reagents. The chapters focus on the scope of the chemistry and practical issues, rather than mechanistic detail. A list of laboratory suppliers of zinc reagents is given in an appendix, though a large-scale supplier of diethylzinc (Witko) is not listed (it is mentioned, however, in the text), and a compilation of organozinc reagents with literature references is a useful additional appendix. Literature coverage is through 1997.

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Lewis Acid Reagents. Edited by H. Yamamoto. Oxford University Press: Oxford, UK. 1999. 270 pp. £75.00. ISBN 0 19 850099 8.

This volume, in the excellent series from Oxford University Press, shows the usual mix of reviews and practical information. Whilst process chemists—particularly those interested in asymmetric synthesis, aldol reactions, and asymmetric Diels—Alder and ene reactions—will find very useful information, they will have to search through several chapters for the data. Each chapter is built around one metal or group of metals, so reactions which can be catalysed by many metals are discussed several times. The advantage of this approach is that the chapter author is usually the (Japanese) expert in this field and covers the subject in great depth. Reagents covered include organolithiums, boron, magnesium, zinc, titanium (focusing only on enantioselective titanium complexes), tin, silicon, silver and gold, zirconium, hafnium, scandium and yttrium, lanthanides, and “other transition metals”. The final chapter is on Lewis acid-assisted anionic polymerisations. Readers expecting information on the older, inorganic Lewis acids will be disappointed—there is no historical perspective. This is a useful book—the practical procedures and protocols ensure that it will be widely read—but not as good as others in the series. The practical detail is less concise (volumes of work up solvents and reagents not given). Hazard information is not as prominent (no warning on the use of lithium perchlorate!), and the preparation of key reagents (which are not commercially available) is not given.

The volume seems to have been a long time in preparation since one chapter (presumably from the most efficient author who delivered his manuscript on time!) has references only up to 1995—this is a serious flaw when rapid advances are being made to the topic.

Despite these criticisms, this volume is recommended as an important source of practical information.

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*Unsigned book reviews are by the Editor.