

Book Review

Edited by MANFRED SCHLOSSER

Organometallics in synthesis: a manual

John Wiley & Sons, Chichester, 2002,
2nd edn, 1243 pp; price £95.00.
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A new edition of a highly successful text first published in 1994, this book approaches its topical subject matter in a particularly appealing manner, with three commendable achievements. Firstly, it addresses the mechanistic principles of organometallic reactivity with regard to practical applications in organic synthesis; secondly, it provides a comprehensive guide and summary to the results of recent research in this intensive and fast-moving field; and thirdly, and most unusually, it offers clearly described, detailed working procedures and practical advice for a large number of the most useful transformations discussed. Whilst this attractive approach has been maintained in the new edition, there is one very startling change: the book has doubled in size. To some extent, this simply reflects the pace of advance in the field over the past 8 years, but it is also a consequence of the fact that the editor, 'in order not to discourage the reader with too voluminous a book', restricted coverage in the first edition to the most popular metals and methods. Rectifying this short-coming, additional chapters have now been introduced on organozinc, organozirconium, and organoiron and chromium chemistry, whilst the

chapters on the other metals (tin, aluminium, copper, titanium, palladium, alkali metals and the non-metal boron) have all been updated to include chemistry up to the late 1990s. The ten contributors are active and authoritative workers in their respective areas.

The chapters are roughly equally weighted in length, with the exception of the first on organoalkali chemistry. Schlosser's contribution on this topic is a *tour de force*, with an almost overwhelming number of tables summarizing the conditions of lithiation of a huge range of substrates, with over 2000 references in this chapter alone. As in all the chapters, however, the review of the methodology and mechanisms is accompanied by clear and explicit experimental procedures, and there are practical tips on the handling of organometallic compounds, storage and storability, suitable glassware, and methods of assessment of purity. The reader's attention is even drawn to the unsuitability of carbon dioxide fire extinguishers in tackling fires involving organoalkali reagents.

The new chapter on organozirconium chemistry is limited almost exclusively to reactions of zirconocene, Cp_2ZrCl_2 , reflecting the preponderance of this compound in applications of zirconium hitherto employed in organic syntheses. The iron and chromium chapter deservedly devotes much attention to the synthetically versatile π -alkenyl carbonyl complexes of iron and η^6 -arene-tricarbonyl chromium complexes. Given the

widespread use of palladium as a catalyst in the reactions of many other organoelement species, there is inevitably some occasional ambiguity as to the most appropriate chapter for inclusion of certain reactions. For example, the Suzuki cross-coupling reactions of boronic acids are discussed in most detail in the chapter on palladium, with only scant attention under boron, whilst palladium-catalysed couplings of organostannanes are discussed in the chapter on tin. Given the comprehensive index and individual tables of contents for each chapter, however, this is unlikely to pose any confusion to the reader.

The utility of organometallic reagents in synthesis has become so widespread, in industrial processes just as much as in academic research, that familiarity with their diverse range of applications and mechanistic bases is almost essential to any synthetic chemist. The 'psychological and practical barrier to newcomers to enter the field' (alluded to in the preface to the first edition) has undoubtedly been lowered over the past decade, but the sheer diversity of useful reactions is such that a clear, readable and up-to-date reference work needs to be to hand. This book offers just that.

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