

## Book reviews

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*Inorganic Reactions and Methods, Volume 7, Formation of Bonds to N, P, As, Sb, Bi (Part 1)*; edited by J.J. Zuckerman. VCH Weinheim 1988 xxii + 387 pages. DM284 ISBN 3-527-26265-2.

This book forms part of an ambitious 18 volume project organised by the late Professor J.J. Zuckerman. The aim was to document the whole of inorganic reaction chemistry in a systematic account of the formation of bonds between pairs of atoms. Earlier volumes describe bonds to halogens and to O, S, Se, Te, or Po: the present volume 7 deals with formation of bonds between N, P, As, Sb, or Bi and C, Si, Ge, Sn, Pb, B, Al, Ga, In, or Tl. Formation of bonds between N, P, As, Sb, or Bi and elements still further to the left in the Periodic Table (Groups 1–12 as many of us would now say) will be considered in Volume 8.

The subject matter of each section has been selected and researched by a team of experts; in this volume H.J. Breunig, M.L. Ettel, R. Geanangel, L.K. Krannich, J.L. Mills, J.G. Morse, S. Pirakitagoon, K. Reinhardt, and H.H. Sisler. Their copy has, however, been (in the editor's word) 'homogenised' to produce a uniform style throughout the whole work. This is admirably compact and free of unnecessary verbiage. The use of formulae instead of names for compounds and of (properly documented) abbreviations for common words makes the text seem rather like Chemical Abstracts but it is remarkably readable, clear, and accurate. For those reactions where I am familiar with the literature, I found the coverage was reasonably comprehensive and critical. The authors often pointed out what was not known about particular preparative routes as well as what was established.

The approach and organisation of the present series of volumes offer several advantages over other comprehensive treatises on inorganic or organometallic chemistry. For example, since the emphasis is on bond formation, information is juxtaposed in a unusual way which may give new insight. It is becoming possible now to formulate synthetic goals and strategies in inorganic chemistry as has long been the case in organic chemistry and this book may stimulate new thinking. There are, however, problems which have not been entirely overcome. Research workers require information on physical properties and structure as well as synthesis. A few structural data are provided here: more may be found from the original papers cited but many of the references are to books or review articles which are still required for full details. The editor and publishers have provided extensive indices which occupy almost half the book. These cover authors, compounds, and subjects. The compound index is based on the usual Chemical Abstracts convention for empirical formulae, and entries are repeated at permuted versions. For example,  $(\text{CH}_3\text{O})_2\text{PCF}_3$  appears as  $\text{C}_3\text{H}_6\text{F}_3\text{O}_2\text{P}$ ,  $\text{F}_3\text{O}_2\text{PC}_3\text{H}_6$ ,  $\text{O}_2\text{PC}_3\text{H}_6\text{F}_3$ , and  $\text{PC}_3\text{H}_6\text{F}_3\text{O}_2$ . In contrast to the pages of the text which are densely packed with information, the index pages are printed with enormous spaces, which must increase the number of volumes required in the series and add to production costs. There is also the problem of keeping the

book up to date. There are only a few references later than 1980, yet inorganic syntheses have developed considerably since then.

Whether those engaged in research in inorganic or organometallic chemistry will come to turn first to this book for information on the synthesis of a particular compound is something that time will tell. They will possibly however find it an interesting and stimulating book to read. Professor Zuckerman leaves an editorial achievement on a grand scale.

*School of Chemistry and Molecular Sciences  
University of Sussex, Brighton BN1 9QJ (Great Britain)*

**J. David Smith**

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*Organolithium Methods*; by B.J. Wakefield. Academic Press, London etc., 1988. xvii + 189 pages. £29.50. ISBN-0-12-730940-3.

This volume is the latest addition to the series on *Best Synthetic Methods*, the aim of which, as stated by the editors, is to provide books "each dealing concisely with a particular topic from a practical point of view... full of preparations, practical hints, and detailed examples, all critically assessed, and giving just the information needed to smooth our way painlessly into the unfamiliar territory." This one meets the objectives admirably.

The scope can be seen from the chapter headings: General considerations in the application of organolithium compounds in organic and organometallic synthesis; Preparation of organolithium compounds. Addition of organolithium compounds to carbon-carbon multiple bonds; Addition of organolithium compounds to carbon-nitrogen multiple bonds; Addition of organolithium compounds to thio-carbonyl groups; Substitution at carbon by organolithium compounds; Reactions of organolithium compounds with proton donors; Formation of carbon-nitrogen bonds via organolithium compounds; Formation of carbon-oxygen bonds via organolithium compounds; Formation of carbon sulphur bonds via organolithium compounds; Formation of carbon-halogen bonds via organolithium compounds; Synthesis of organoboron, organosilicon, and organophosphorus compounds from organolithium compounds; Organolithium compounds in the synthesis of other organometallic compounds; Application of elimination reactions of organolithium compounds: arynes, carbenes, ylides, ring opening of heterocycles.

The accounts are clear, concise and authoritative, and will give immediate and effective help to anyone seeking to use organolithium reagents, or employ them in a particular way, for the first time. Organometallic chemists may be a little disappointed that only 6 pages are devoted to the preparation of organometallic compounds of elements other than boron, silicon, and phosphorus, but they do contain a reasonable number of illustrative examples. There is an unusually good subject index.

This book should serve as a model for authors of later volumes in this series. It should be available in all organizations concerned with organic and/or organometallic synthesis, and preferably in the laboratories not only in the library.

*School of Chemistry and Molecular Sciences,  
University of Sussex, Brighton BN1 9QJ (Great Britain)*

**Colin Eaborn**

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