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Book reviews

Organometallic Syntheses. Volume 4

R B King and J J Eisch (eds)
Elsevier, Amsterdam, New York, Tokyo, 1988.
xx + 617 pages, U.S. $236.75. ISBN 0 444 42956 5.

This book is Volume 4 of a set which first appeared as long ago as 1965. Volume 2 appeared in 1981, followed by Volume 3 in 1986 and it is the editors hope that further volumes will now appear on a biennial or triennial cycle.

Part I (353 pages) gathers together procedures for the synthesis of 76 transition metal organometallic compounds, this section being organised according to the transition metal. The sub-sections are: (a) lanthanide, actinide, and early transition metal compounds (16 syntheses), (b) chromium, molybdenum and tungsten compounds (10 syntheses), (c) manganese and rhenium compounds (8 syntheses), (d) iron, ruthenium and osmium compounds (28 syntheses), (e) cobalt, rhodium, and iridium compounds (11 syntheses), and (f) nickel, palladium, platinum and coinage metal compounds (3 syntheses).

Part II (255 pages) contains the procedures for the synthesis of some 85 nontransition metal organometallic compounds. The sub-sections here are: (a) compounds of group IA (synthesis of 11 organolithium compounds), (b) compounds of group IIA (synthesis of 6 organomagnesium compounds), (c) compounds of group IIB (synthesis of 4 organozinc compounds plus the syntheses of the dicyclopentadienyl compounds of zinc, cadmium, and mercury), (d) compounds of group IIIA (synthesis of 12 organoboron compounds, one 1,3-stannaborole compound, and one organoaluminium compound), (e) compounds of group IVA (21 organosilicon compounds, 7 organogermanium compounds, 7 organotin compounds and 2 lead compounds), (f) compounds of group VA (1 organoarsine, 5 organostibine compounds, and 2 organobismuth compounds), and (g) compounds of group VIA (1 organoselenium compound and 3 organotellurium compounds).

The book contains detailed and tested procedures for the preparation of organometallic compounds and each specific or generalised procedure contains useful information such as the reasons for choosing the selected procedure, the safety concerns and pitfalls in the preparation, a properties section and a reference section. There is also a useful metal and ligand index.

This volume is well produced in a camera-ready format and contains information on a variety of compounds. With the increasing use of organometallics in organic chemistry and inorganic material science this work would be a valuable acquisition for most chemistry libraries.

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Silicon Chemistry

J Y Corey, E R Corey and P P Gaspar (eds)
Ellis Horwood 1988
£60. ISBN 0 745 80528 0

The book is a collection of papers written by invited speakers to the Eighth International Symposium on Organosilicon Chemistry. It is stated that a goal of the Symposium was to cover all areas of current interest in silicon chemistry and the organisers have almost attained this goal. The material is organised into nine parts. Part I — Silicon Assisted Organic Synthesis. Part II — Organic Chemistry of Silicon. Part III — Silicon in Living Systems. Part IV — Silicon Reactive Intermediates. Part V — Silicon — Silicon Chemistry. Part VI — Silicon Oxygen Polymers and Materials. Part VII — Inorganic Chemistry of Silicon. Part VIII — Silicon in Solid State Technology. Part IX — Physical Chemistry, Theoretical Studies and Spectroscopy.

In Part I the important topic of silicon assisted organic synthesis is introduced in a plenary lecture by L. Paquette who discusses stereochemical and reactivity patterns in silyl substituted cyclo alkanes and acyclic analogues. The remaining chapters in this section illustrate the scope and versatility of organosilicon reagents in organic synthesis. The coverage in this part is particularly satisfactory and one is left with a good general appreciation of this topic. Part II entitled 'Organic Chemistry of Silicon' illustrates the impossibility of achieving the stated goal of the symposium. The coverage of this topic is scrappy but it seems unlikely that adequate coverage of such a vast topic could have been achieved in a non-specialist volume of this kind.

In Part VI Weyenberg in his plenary lecture, 'Silicons — Past, Present and Future' gives a comprehensive account of the development and applications of siloxanes. There is only one other lecture devoted to this important topic which is rather surprising since it has been the continuing industrial and commercial success of the silicones which has provided much of the stimulus and indeed capital for basic research in organosilicon chemistry.

Overall the coverage is good and this compendium of silicon chemistry gives the reader a real sense of current status of research in this area and signposts the way in which research is going. It should be a valuable guide and reference book for all who wish to enter silicon research as well as experienced workers in the area.

Ownership will be limited by cost. It is too expensive for post-graduates and academics. Only libraries, industrialists and those who can obtain free copies will be able to own this book.

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