

*Journal of Organometallic Chemistry*, 107 (1976) C49–C51  
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### Book reviews

*Gmelin Handbook of Inorganic Chemistry, New Supplement Series, Vol. 26, Organotin Compounds, Part 1, Tetraorganotin Compounds, SnR<sub>4</sub>*. H. Schumann and I. Schumann, volume authors, H. Bitterer, volume editor, Gmelin Institut für Anorganische Chemie und Grenzgebiete der Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Springer-Verlag, Berlin/Heidelberg/New York, 1975, iv + 182 pages, DM 301, \$129.50 (in German)

The many chemists who are concerned with organotin compounds in one way or another will welcome this addition to the Gmelin Handbook series on organometallic compounds, the first volume of the series devoted to organotin compounds by Herbert and Ingeborg Schumann, not just for its usefulness in its own right, but also as a harbinger of a complete treatment of all classes of organotin compounds. (The organization of this organotin series is explained in the preface). The present volume treats tetraorganotin compounds of type R<sub>4</sub>Sn (R = alkyl, alkenyl, alkynyl, aryl and heterocyclic) in which all R substituents on the tin atom are the same. A good portion of the book (84 pages) is devoted to the much studied simpler tetraalkyltins (R = Me, Et, Pr, Bu) and another 24 pages are used to bring all available information on tetraphenyltin. Everything known about a given compound is provided: preparation, structural and spectroscopic aspects, physical and thermodynamic properties, chemical reactions, biological effects and commercial applications. The exhaustive coverage can have some confusing effects. What really is the true value of  $n_D^{20}$  for tetraethyltin, a chemist may ask himself after he has prepared this compound and measured its index of refraction to obtain a quick indication of purity: twenty different values are given here in thirty references, ranging from 1.4670 to 1.4743.

Especially useful in a more general sense are the excellent bibliographies which take up the first thirty pages of this book and provide general references (books, book chapters, review articles, etc.) on organometallic chemistry in general, on organic compounds of the main Group IV elements, on organotin compounds, on tetraorganotin compounds and on R<sub>4</sub>Sn compounds in which all four R groups are the same. A commendable feature of this book is the formula index which makes it easy to find a particular compound.

The literature coverage includes original journal articles, reviews, patents (via "Chemical Abstracts"), theses and conference reports and is complete through the end of 1973. The text is in German, but English translations of the preface, the table of contents and chapter and section headings are provided.

One can only admire the Schumanns for taking on such a formidable task: organotin chemistry has grown explosively in the last two decades. A visit to the "Gmelin room" in the Schumann's house in Berlin left your reviewer very impressed and assured that a very thorough job is being done.

It will, however, take years to complete the Gmelin organotin project, and one wishes that the Schumanns could devote full time to this task so that all of the planned volumes will be available as quickly as possible.

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*MTP International Review of Science. Inorganic Chemistry, Series Two. Vol. 9. Reaction Mechanisms in Inorganic Chemistry*, M.L. Tobe, editor, Butterworths (London) and University Park Press (Baltimore), 1974, 380 pages, \$37.50, £13.00.

This book is one of the volumes of the second series of volumes in *MTP International Review of Science*, on inorganic chemistry. The first series also has a volume edited by Tobe on mechanisms of inorganic reactions. For readers of the first volume, the present book in format and style of writing is much the same. In content it updates the literature review of the previous volume, with references mostly for the years 1971 and 1972. A total of 2118 references are given, and this in itself is justification for such a recurring book intended to keep the reader informed of "recent" publications in a particular area of research.

In the preface, Tobe points out that he was unable to find an author willing to write a chapter on substitution reactions of the main group elements and that this leaves an unfortunate gap in the coverage which he hopes will be remedied in the next series. Closely related to this appears to be the lack of coverage of substitution reactions of labile metal complexes, and this too should be kept in mind as authors are selected to prepare the next series. In spite of some such shortcomings, the volume does present a good literature survey of most of the topics on mechanisms of inorganic reactions. The chapter titles and authors are as follows: (1) Reaction Mechanisms of the Light Elements (Li, Be, B), J.C. Lockhart; (2) Reaction Mechanisms at Nitrogen, M.N. Hughes; (3) Substitution Reactions of 4-Coordinated Planar Complexes, J.S. Coe; (4) Mechanisms of Octahedral Substitution, T.P. Dasgupta; (5) Simple Substitution Reactions in Complexes of Transition Metals in their Low Oxidation States, D.A. Brown; (6) Metal Complex and Related Photochemistry, C.H. Langford and N.A.P. Kane-Maguire; (7) The Rates and Mechanisms of Oxidation-Reduction Reactions Involving Metal Ion Complexes, R.G. Linck; (8) Intramolecular Stereochemical Change in Transition Metal Complexes, J.P. Jesson; (9) Reactions Relevant to Homogeneous Catalysis by Transition Metals, A.J. Deeming; (10) Bio-inorganic Mechanisms, M.N. Hughes.

Chapters 9 and 10 were not part of the first volume. These two chapters are a welcome addition, because there is considerable current research activity in these two areas of inorganic mechanisms. The discussion of homogeneous catalysis is largely devoted to oxidative addition reactions and to insertion reactions, but mention is also made of electrophilic and nucleo-