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Book review

Organometallic Chemistry Reviews, Annual Surveys: Si, Sb, Bi, Mn, Tc, Re, Heteronuclear Complexes. Edited by R.B. King and J.P. Oliver, Journal of Organometallic Chemistry, Library 17, 1985, pp. x + 580, price: US$166.75/Dfl.450.00, ISBN 0-444-42515-2. In U.S.A./Canada, the book is available from Elsevier Science Publishers Co. Inc., P.O. Box 1663, Grand Central Station, New York, NY 10163.

More than half of this volume is devoted to silicon. The first chapter by G. Larson covers the preparations and reactions of organosilicon compounds published during 1983. This section is subdivided into alkyl-, aryl-, vinyl-, ethynyl-, allyl-, propargyl-, benzyl-, α, β, and other carbofunctional, silanes, with a section on hydrosilation and one on reactive silicon species. The latter includes radical species, ionic species, silylenes, silenes and disilenes. Where appropriate, reference to spectroscopic studies is given, these being mostly n.m.r., but including some optical spectroscopy, X-ray diffraction, mass spectroscopy and e.p.r. There are 447 references, attesting to the high level of activity in this area. Much of the 140 pages of the script consists of reaction schematics, presented clearly in diagramatic form.

The second chapter by J. Corey describes advances in the synthesis and reactivity of silafunctional compounds for 1983. This chapter includes sections on Si–H bonds, and silicon bonds to group VA, VIA and VIIA elements. The group VA compounds are predominantly of N and P, with only one reference to As and Sb. For group VIA the major emphasis is on Si–O compounds such as alkoxides, siloxanes and silyl enol ethers, with a very small section on S and Se compounds. The group VIIA compounds are the various halides, but also included are the pseudo-halides such as the NCO, NCS, CN, and N_3 groups. One section covers silicon bonds to metals (main group and transition) and metalloids, together with the more extensive area of silicon containing ligands such as the silylmethyl derivatives. A final section reviews the compounds with silicon–silicon bonds. The presentation is again clear and concise, with a more extensive use of tables. There are 599 references in this chapter. There is, perhaps unavoidably, overlap between the two chapters, with consequent repetition of some references, but this does not appear to be serious in view of the total amount of work presented.

The next two chapters of the book contain reviews for 1983 of the organometallic chemistry of Sb (136 references), and Bi (38 references) by

G.O. Doak and L.D. Freedman. These could probably have been condensed into one chapter, especially since 23 of the 38 references for the latter also appear in the former.

The fifth chapter is a survey of the group VIIB transition metal organometallics by P.M. Treichel (218 references). The compounds surveyed include carbonyls, hydrides, isocyanides and nitriles. σ- and π-carbon donor ligands, groups VA and VIA donors, and complexes with metal–metal bonds. The format followed is similar to two previous years' reviews by this author. Structural studies are listed separately, which is very useful.

The final chapter is a review of cluster complexes with heteronuclear metal–metal bonds, by M.I. Bruce covering 1982–83 (234 references). The author has divided the topic into 14 subsections for the various classes of these cluster complexes. Synthetic, structural, reactivity and spectroscopic aspects are surveyed and presented with clear schematics, structural diagrams, and well-organised tables. As above, structural studies are tabulated separately at the end of the review with metal–metal bond distances listed. There is very little overlap between the last two chapters. In one of the few cases where the same reference is used, different compounds in the same paper are discussed. Overall the text is well presented, although the purpose of putting the first four chapters in with the last two is not clear. This does lead to a rather expensive text which might have served better as two less expensive ones for the individual researcher to choose from. As with any such compilation there are a few omissions and errors, but to this reviewer the major problem remains the lapse time between the year surveyed and the year published, although it has obviously been kept as short as possible. Definitely recommended for the research library at least.

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