

## Book reviews

Gmelin Handbook of Inorganic and Organometallic Chemistry. Sn. Organotin Compounds. Part 24. Dinuclear Compounds. Springer-Verlag, Berlin etc. 1996. *xiv* + 292 pages. DM1760 ISBN 3-540-93738-2.

This excellent Gmelin series on organotin compounds, started in 1975, has now reached Part 24, which is concerned with species containing two tin atoms both attached only to carbon atoms and linked through carbon atoms. Specifically they are of the type  $R_3SnGSnR_3$ , where  $R = Me, Et, Pr, Pr^i, Bu, Bu^t$ , or other alkyl or cycloalkyl groups, and where  $G$  is a single carbon atom link, such as  $CX_2$  or  $C(X)Y$ , or a chain such as  $(CH_2)_n, CH_2CHX, CHXCHX, CH=CH, CHXC=CH, C=C, C(X)=C=C=C(Y)^-$ , or an aromatic or heterocyclic group. Compounds of the type  $Me_3SnGSnMe_3$  take up 187 pages, the initial 41 of them devoted to species of the types  $(Me_3Sn)_2CX_2$  and  $(Me_3Sn)_2C(X)Y$ , and the last 3 pages to compounds having the  $Me_3Sn$  groups on the separate cyclopentadienyl rings in metallocenes. (I was interested to find that the first example of this last type of compound, viz.  $(Me_3SnC_5H_4)_2Fe$ , was made by my colleagues and me in 1979, for I had forgotten about that work!). Corresponding species containing  $Et_3, Pr_3Sn,$  and  $Bu_3Sn$  take up 14, 3 and 33 pages, respectively, and those with other  $(alkyl)_3Sn, (cyclo-alkyl)_3Sn$  or  $(vinyl)_3Sn$  groups occupy only 4 pages in total.

As usual the presentation is almost wholly in the form of tables, and a vast body of detailed information is provided in this way for each compound, mainly on its methods of preparation and physical properties, but where relevant with an outline of its reactions and biological features. I note with pleasure that, as I had advocated in earlier reviews, Gmelin has at last adopted use of common symbols such as  $Ne, Et, Ph$  etc., which is more economical and makes the text more pleasant to read. (Compare  $Bu^t_3Sn$  with  $\{(CH_3)_3C\}_3Sn$  and  $Ph_3Sn$  with  $(C_6H_5)_3Sn$ ). I do hope this new practice will apply to all volumes in the future.

The now usual, and helpful, there are lists of general articles or reviews on physical properties, analytical, environmental and toxicological aspects, and biological applications. One set of these on general aspects of organotin chemistry mainly refer to articles that were

published after the compilation of Part 23, but a second set is concerned with publications particularly relevant to binuclear compounds, with dates back to 1949; I suspect that Professors R. West and E.G. Rochow will be surprised to see that they are credited with a 1952 paper entitled "A system of bond refractivities for tin compounds"! There is a good empirical formula index.

This series on organotin compounds becomes even more valuable as it becomes more complete and as wider and wider use is made of such compounds in organic and organometallic synthesis. No doubt access to the information provided will be increasingly made through the on-line system.

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Advances in Physical Organic Chemistry, Vol. 30, D. Bethell, Editor, Academic Press, London, 1995, ix + 242 pp. £55.00. ISBN 0-12-033530-1

In view of the title of this series it is surprising to me how often the volumes contain reviews of direct interest to organometallic chemists. Thus the present volume begins with a chapter entitled "Matrix Infrared Spectroscopy of Intermediates with Low Coordinated Carbon, Silicon and Germanium Atoms", by V.A. Korolev and O.M. Nefedov. It occupies 61 pp., 6 of them taken up with an introduction outlining principles and methods of matrix isolation, 6 with carbenes and their silicon and germanium analogues, 25 with free radicals, 5 with conjugated organic radicals (allyl, propargyl, benzyl and cyclopentadienyl types), 8 with unstable compounds containing double-bonded silicon and germanium atoms (silenes, silanones, germanones, germathiones), and 5 with conclusions and references. It is authoritatively written (Professor Nefedov has made important contributions to the field) and much information is concisely