

## Book reviews

*Chemistry of Tin*, 2nd ed., P.J. Smith (Ed.), ISBN 0-7514-0385-7, pp. 578 + xiv, Blackie, London, 1998, ca. £149.00.

The first edition of this book appeared in 1989 and was well received. The second edition is in my view significantly better, and not just because of the inclusion of advances in the intervening nine years.

The book is made up of 15 chapters as follows: (1) Tin—the element, by P.J. Smith (nine pages, three refs.); (2) Compounds of tin: general trends, by P.G. Harrison (52 pages, 394 refs.); (3) The inorganic chemistry of tin, by J.D. Donaldson and S.M. Grimes (32 pages, 116 refs.); (4) Formation and cleavage of the tin–carbon bond, by J.L. Wardell (42 pages, 196 refs.); (5) Organometallic compounds of tetravalent tin, by K.C. Molloy (37 pages, 219 refs.); (6) Organometallic compounds of divalent tin, by P.D. Lickiss (27 pages, 184 refs.); (7) Tin–metal bonded compounds, by F. Glockling (61, 441 refs.); (8) Radical chemistry of tin, by A.G. Davies (25 pages, 129 refs.); (9) The uses of organotin compounds in organic synthesis (97 pages, 1130 refs.); (10) Recent studies on the mode of biological action of di- and trialkyltin compounds, by Y. Arakawa (40 pages, 177 refs.); (11) Health and safety aspects of tin chemicals, by P.J. Smith (13 pages, 99 refs.); (12) Industrial uses of tin chemicals, by C.J. Evans (37 pages, 211 refs.); (13) Solid state spectroscopy of tin compounds, by T.N. Mitchell (60 pages, 204 refs.); (14)  $^{119\text{m}}\text{Sn}$  Mössbauer studies on tin compounds, by R. Barbieri, F. Huber, L. Pellerito, G. Ruisi and A. Silvestri (60 pages, 204 refs.) and (15) The analysis of organotin compounds from the natural environment by D.P. Miller and P.J. Craig (25 pages, 110 refs.).

The wholly new chapters, 11, 13, 14 and 15, are valuable additions. That on solid state NMR spectroscopy is especially timely and is well done. Also timely and important is the new chapter on health and safety aspects, which includes a helpful world-wide list of manufacturers of tin chemicals. A brief account of Mössbauer spectroscopy was included in the earlier edition, but this much more detailed account is to be welcomed. Chapter 9, on uses in organic synthesis, is essentially new in content because it concentrates on developments since the appearance of the first edition.

As the authors say, a whole book would be needed to do full justice to this increasingly important field, but they provide a first class summary of the most important features; it is revealing that the chapter cites 1130 references compared with the 170 in the first edition.

Chapter 10 can also be regarded as new since the approach is different from that in the chapter entitled simply Biological chemistry of tin in the earlier edition; it is perhaps somewhat misleadingly misnamed as being concerned with recent studies whereas of the 177 references only about 55 are from the 1990s, and some 44 of these are confined to the author's own work, but it is nevertheless an interesting and well organized account. Among the chapters that have the same titles as before, that on compounds of bivalent tin required a 50% increase in the number of references to accommodate the recent advances, and the account is admirably up-to-date and well presented. There is a similar percentage increase in the case of the chapter on industrial uses.

Individuals will, reflecting their special interests, differ in their views about balance in the allocation of space to the various topics covered. Thus, for my part, I suggest that more than 11.5 pages could usefully have been set aside for discussion of the cleavage of the tin–carbon bond; in particular it seems to me that alongside ten pages on electrophilic cleavage and 1.5 on homolytic cleavage, a single five-line sentence (with seven, not best chosen, references) on nucleophilic cleavages is inadequate; such cleavages are very interesting mechanistically, can generate carbanions (and so give information about the stabilities of those ions and thus the acidities of the corresponding hydrocarbons or substituted hydrocarbons) and can be used in synthesis.

The book should be available in all institutions concerned with tin chemistry, organometallic chemistry, or organic synthesis.

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