Science of Synthesis, Volume 4, Edited by M. Moloney; Georg Thieme Verlag: Stuttgart, **2002**, 912 pp, €1750, ISBN 0-86577-944-9, 3-13-112181-5.

This book represents the most comprehensive overview of the organometallic chemistry and OMCOS (organometallics toward organic synthesis) by the use of Ge, Sn, and Pb. Over half of the volume is devoted to the chapter on Sn, indicating that Sn is the most commonly used and important element among the three metals. The book starts with a brief introduction to the fundamental structural properties of the three elements and their organometallic derivatives, followed by an explanation on the organization of the product subclasses of Ge, Sn, and Pb.

At the beginning of the chapters on Ge a well-written and concise summary on structure, reactivity, spectroscopy, and toxicity of Ge compounds is given. This style of summary is provided also at the beginning of both the Sn and Pb chapters, which is a very useful overview of the chemical properties of those organometallic compounds. A very detailed description of the synthesis of germanium hydrides, digermenes and digermanes, metallated germanium compounds, germanium oxides, -sulfides, -selenides, -tellurides (double bonded), iminogermanes, germens, germylenes, organogermanium halides, germanium oxides, germanium carboxylates, -phosphates, and related compounds, germanium sulfides, -sulfoxides, -selenides, -tellurides, and related compounds (single bonded), germylamines, -phosphines, -arsines, -stibines, germyl cyanides, acylgermanes, imidoylgermanes and α-diazoalkylgermanes, α-halo and α-alkoxyvinylgermanes, α-halo, α-hydroxy-, α-alkoxy-, and α-aminoalkyl germanes, alkynylgermanes, germylketenes and germylketenimines, aryl- and heteroarylgermanes, vinylgermanes, propargyl- and allenylgermanes, benzylgermanes, allylgermanes, and alkylgermanes is provided, and their application to organic synthesis is also mentioned when they can be applied to useful organic transformations. Some organogermanium compounds are very peculiar and it is doubtful that those derivatives are useful in organic synthesis.

In the chapters on Sn, the synthesis starts similarly with tin hydrides and the organization is roughly similar as that of the Ge chapter. An exception is that tin enol ethers are treated in product subclass 11, while germanium enol ethers are not known. Tin enol ethers are important in organic synthesis because they behave as a masked enolate. The synthesis of a wide range of organostannanes, which are frequently used in organic synthesis or are structurally interesting, is well written, and I think it is very useful when the standard synthetic procedure for important organostannanes is required. Allyl-, alkenyl-, propargyl-, allenyl-, and arylstannanes are especially important in organic synthesis, a comprehensive and nice overview of the application of those organostannanes in organic synthesis is provided.

In the chapters on Pb, the organization of materials is roughly similar to that of Ge and Sn, although functional groups attached to organolead compounds are limited in comparison with those of Ge and Sn compounds. Application of organolead compounds to organic synthesis is very limited.

In summary, the book is comprehensive and thoughtfully organized. Readers can easily find the standard synthetic procedure for important organogermanium, -tin, and -lead compounds, and also realize how useful those organometallics are in organic synthesis. It is a good idea to place references on the last page of each chapter, since it makes finding references easier for the reader. I believe this book serves as a valuable source for up-to-date information on previously reported chemistry of Ge, Sn, and Pb.

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