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Book review

***Science of synthesis: Houben-Weyl Methods of Molecular Transformations, Vol. 5, Organometallics, Compounds of Group 14 (Ge, Sn, Pb)*, edited by M.G. Moloney, Thieme Verlag, Stuttgart (2003), xlvii+864 pp., US\$1740, €1750; ISBN: 0-86577-944-9**

This book is one of the early volumes in the proposed 48-volume series re-launch of the well-known *Houben-Weyl Methods of Organic Chemistry*. It covers, in English, material described in the previous edition in volume XIII/6 and part of volume XIII/7, which were published in German in the 1970s. The literature covered in the current volumes is mainly since the previous edition was published but it does include important earlier references, back into the 19th century. At the head of this review the first thing that the reader may notice is the price of the book (and this might provoke a pause in which to calculate the approximate cost of the whole series) and then the following questions will arise, 'Can this book and the series of which it is part be worth the money?' and 'Why should I use Science of Synthesis instead of other printed sources or online databases?' Attempts to address these questions are made below.

The synthesis of new organic compounds is at the heart of much of the modern materials industry, of importance in molecular biology and biochemistry, and, more obviously, in the modern drug industry. There is thus a continuing need for ready access to reliable information on synthetic methods. The stated aim of the editorial board of this series of books is 'to make Science of Synthesis the ultimate tool for the synthetic chemist in the 21st century'. This is an ambitious aim. The series attempts to achieve it by providing a systematic and, it is to be hoped, comprehensive guide to the synthetic methods available to make almost any known organic compound. This volume covers the methods available for the preparation of organo-germanium, -tin and -lead compounds in 194, 422 and 172 pages, respectively. All of the classes of compound that might be expected to be found are present, for example, hydrides, oxides, alkyls, aryls, metallated compounds, multiply bonded compounds, low-coordinate compounds such as stannylenes, acyl derivatives, etc. The careful organisation into many small, specific chapters means that it is easy to address questions such as 'How can I make tin enol ethers?' The answer in this case is given in section 5.2.11, which provides four methods together with specific experimental procedures. Having ready access to a critical survey of synthetic methods for a particular class of compounds is very useful. This may not be easy

using many online databases, for which either a general question may be difficult to formulate or which give masses of irrelevant data that overloads the researcher. Another advantage of the Science of Synthesis approach is that it includes experimental details for particular synthetic methods. This saves a search of the original literature, as it is easy to compare yields, reagents and equipment required for a range of methods. Consequently an appropriate method can be readily chosen. Again, this is not readily achieved using online databases, or comparable printed sources such as the 'Patai' *Chemistry of Functional Groups* or *Comprehensive Organic Functional Group Transformations* series, where experimental details are not given. Pertinent safety information is provided, and this is also useful in making a choice of synthetic method.

The book will be of interest to anyone involved in the chemistry of organic derivatives of germanium, tin or lead. There are over 3200 references cited, but inevitably with a work of this type, there are few within a year or two of the publication date (very few after the year 2000) and up-to-date information will be more readily found by searching databases. The detailed table of contents at the beginning, together with an extensive keyword index (where the keyword is indicated either as a starting material or as a product) means that it is easy to find a particular type of compound. The many chapters are written by a large total number of authors, chosen for their specific expertise, which means that the coverage is excellent and reliable. There is an electronic version of the series, which will allow substructure and keyword searching. For details, see the publisher's website. There is also a guidebook to the series, which gives full details of the contents of all the volumes, authors, editors, etc. The guidebook is, however, not needed to use individual volumes. The book is very well produced and its organisation and clarity of presentation makes it a pleasure to use. This volume, and others in the series, would be of undoubted use in any library used by organic and organometallic chemists but research students may well favour the electronic version. Sadly it is unlikely that many librarians will be persuaded to commit the necessary funds for the purchase of this series.

P.D. Lickiss

Department of Chemistry, Imperial College London,
London SW7 2AZ, UK

E-mail address: p.lickiss@imperial.ac.uk