

Book reviews

Dictionary of organometallic compounds. Second Edition.

B.J. Aylett, M.F. Lappert and P.L. Pauson (eds.) Chapman and Hall, London, 1995. £2,950
ISBN 0-412-43060-6

The first edition of this Dictionary appeared 10 years ago. It was received with enthusiasm, and rapidly became an important tool for organometallic chemists. This second edition, in five volumes, is even better, for not only are there over 10,000 new entries but the content of each entry has been enhanced. Primary literature has been surveyed to mid-1993 and some important information from 1994 publications is included. The compilation will be updated in supplements, the first of which should appear in late 1995.

The entries now indicate the methods of preparation of each compound and, where relevant, use as a reagent or catalyst. The increasing importance of organometallic compounds in synthesis is recognised by inclusion of an Index of Synthetic Reagents.

As in the case of the first edition, a very valuable feature is that before the entries for each element there appears an index in which the formula of each compound is displayed, usually as a line structure. It is thus very easy and quick to see what types of organic derivatives are known for the element, and it is often examples of general type rather than a particular compound that the reader will wish to find.

This set of volumes is essential for all institutions concerned specifically with research or use of organometallic compounds, but in view of the rapidly increasing importance of organometallic reagents in organic synthesis should also be readily available in all organic laboratories. Indeed, it should be in all chemical reference libraries.

The volumes are beautifully produced, and very strongly bound to stand up to the intensive use they will receive. It is expensive, but it must be costly to compile, and its purchase will be a profitable investment for most

institutions. The Dictionary is also available on CD-ROM.

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Advances in Silicon Chemistry Vol. 2.

G.L. Larson (ed.), JAI Press, Greenwich, CN, 1993,
195 + xi pages, £62.50 USD 97.50
ISBN 1-55938-177-9

This volume bearing a publication date of 1993, was received for review only in the Spring of 1995.

The first volume in the series was outstanding and I awaited this one with much interest. If it excites less enthusiasm it is probably because the subjects are of more specialized interest and not because the accounts are in any way of lower quality. Indeed, the reviews are written authoritatively by leading workers in the fields concerned, and all seem impressively comprehensive and clearly and concisely presented. Literature coverage extends mainly into 1992 with one or two 1993 references. Somewhat unusually for these days there is a reasonably satisfactory subject index, suggesting that there was some direct human input into its compilation.

The reviews are on: (i) α,β -epoxysilanes (by P.L. Hudrlik and A.M. Hudrlik, 89 pages, 308 references); (ii) Gas phase studies of the negative ion chemistry of silicon (by R. Damrauer; 45 pages, 82 references) and (iii) theoretical investigations of the thermochemistry and thermal decomposition of silanes, halosilanes, and alkoxy silanes (by M.S. Gordon, J.S. Francisco and H.B. Schlegel; 48 pages, 218 references). All are very good, but I found especially timely and interesting that by Damrauer, which brings together the remarkable amount of wholly novel information revealed by negative ion studies, much of them carried out by Professor Damrauer and by C.H. Depuy, separately or in association. Though many of the observations can be accounted for

in theoretical terms some still need more detailed consideration; for example the rather surprising similarity of the effects of Me and MeO groups on the acidities of the silanols $\text{Me}_x(\text{MeO})_{3-x}\text{SiOH}$.

This series makes a valuable contribution to the development of organosilicon chemistry, and some reviews will be of use to a wide range of chemists; in this volume, for example, synthetic organic chemists will find much of interest in the well-organized account of α , β -epoxysilanes.

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Gmelin Handbook of Inorganic and Organometallic Chemistry. 8th Edition

Organogermanium compounds. Part 4. Compounds with germanium-hydrogen bonds

U. Krüerke, C. Siebert and B. Wöbke (eds.) Berlin, 1994. 364 + xiv pages. DM 2200
ISBN 3-540-93696-3

This volume, compiled by J.E. Drake, C. Siebert, and B. Wöbke, continues in the excellent tradition of the Gmelin series. It is concerned with mononuclear compounds containing only Ge-C and Ge-H bonds; those containing Ge-H bonds along with bonds to non-carbon atoms, such as halogen, oxygen, or nitrogen, have been, or will be, dealt with in other volumes. Over half of the volume is concerned with monohydrides of the type GeR_3H and GeR_2RH ; and GeR_2H_2 , GeRR^1H_2 and GeRH_3 take up 23, 8, and 60 pages, respectively. There is the usual empirical formula index and a (very useful) ligand formula index. The literature up to the end of 1992 is fully covered, and there are a few later references.

What a superb series this is, and what a pity that the price of the volumes means that it is often not found in all the institutions in which it should certainly be available. (The progressive rise in the value of the German currency unfortunately makes purchase even less likely in most other countries.)

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Gmelin Handbook of Inorganic and Organometallic Chemistry. 8th Edition

*Sn organotin compounds. Part 21. U. Krüerke (ed.), Berlin, 1994, 309 + xiii pages. DM 1890.00 Sw.Fr.1853.00
ISBN 3-540-93690-4*

This is the latest addition to the comprehensive series on organotin compounds that now comprises 21 volumes, with more to come. This volume, which was compiled by H. Schumann and I. Schumann, is concerned with organotin compounds containing bonds between tin and transition metals of Groups III-VII (3-7), specifically, Y, La, Pr, Nd, Yb, U, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn and Re. The usual information is given for each compound, viz. preparation, physical properties and reactions, much of it in convenient tabular form. In addition, in a feature of great value in this series on organotin compounds, there are lists of relevant recent reviews dealing with physical properties, reactions, analysis, environmental aspects, and uses of organotin compounds in general.

The excellent set of volumes on organotin compounds becomes more and more valuable as it becomes more comprehensive. It is hard to believe that any laboratory concerned with research on or use of organotin compounds can function wholly efficiently without having it available.

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Organic Reactions. Equilibria, Kinetics and Mechanism

F. Ruff and I.G. Csizmadia. Elsevier, Amsterdam, 1994. 480 pages. Dfl. 380.00; USD 217.25
ISBN 0-444-88174-3

Although this book has very little organometallic content I think a review in this Journal is justified because it describes general methods of determination of mechanism that are applicable also to organometallic chemistry, and does so with exceptional clarity.

The overall content is much like that of the many previously available books on organic reaction mechanisms. Chapters on methods of elucidating mechanisms, (especially those involving kinetic studies) and on energetics, are followed by those on: structure-activity relationships; isotope effects; environmental effects (of solvents and salts); acids; bases; electrophiles, and nucleophiles; and homogeneous catalysis (including a brief introduction to catalysis by transition metal ions or complexes). Where it differs from most of the other