

Book review

GMELIN HANDBOOK OF INORGANIC CHEMISTRY, 8th Edition, New Supplement Series. ORGANOIRON COMPOUNDS, Part-B2, MONONUCLEAR COMPOUNDS 2, U. Krüerke and A. Moulik, volume authors, U. Krüerke, volume editor-in-chief, 1978, ii + 250 pages, DM 573, \$ 286.10. Part B4, MONONUCLEAR COMPOUNDS 4, K. Holzapfel, U. Krüerke, E. Luther, H. Somer and A. Slawisch, volume authors, A. Slawisch, volume editor-in-chief, 1978, vi + 377 pages, DM 783, \$ 420.70. Part B5, MONONUCLEAR COMPOUNDS 5, I.v. Wilucki, volume author, A. Slawisch, volume editor-in-chief, 1978, ii + 231 pages, DM 501, \$275.60. Part C1, BINUCLEAR COMPOUNDS 1, M. Jacob, O. Koch and B. Lubke, volume authors, U. Krüerke, volume editor, 1979, vi + 292 pages, DM 661, \$ 363.60. Gmelin Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften and Springer-Verlag, Berlin/Heidelberg/New York.

Of all organometallic derivatives of the transition metals, those of iron undoubtedly are the most numerous and the planned coverage of all organic compounds of iron, including ferrocene and its derivatives, by the Gmelin Handbook is an ambitious (but very worthwhile and welcome) undertaking indeed. The Gmelin organoiron series is well underway, five volumes having appeared already. We review here four more which were published in the latter part of 1978 or early in 1979.

Three of these new books deal with mononuclear organoiron compounds. Part B2 covers $\text{Fe}(\text{CO})_4$ complexes: the hydride, $\text{H}_2\text{Fe}(\text{CO})_4$, and its salts; the halides, $\text{X}_2\text{Fe}(\text{CO})_4$; $\text{Fe}(\text{CO})_4$ complexes of type $\text{LFe}(\text{CO})_4$ containing neutral Group V and Group VI ligands; compounds in which the $\text{Fe}(\text{CO})_4$ group is bonded, via iron, to boron, the Group IV elements, mercury or other transition metals; organic and perfluoroorganic derivatives of type $[\text{RFe}(\text{CO})_4]^-$, $\text{R}(\text{X})\text{Fe}(\text{CO})_4$ and $\text{R}_2\text{Fe}(\text{CO})_4$, as well as other diverse $\text{Fe}(\text{CO})_4$ containing complexes.

In part B4 we find all kinds of isonitrile complexes of iron, arranged according to the number of isonitrile ligands

present in the molecule, carbene complexes of iron and mononuclear iron complexes containing organic ligands in which two carbon atoms are bonded to iron (e.g., η^2 -olefin complexes and ferracarbocyclic compounds). Included in the latter category also are iron complexes of ortho-carboranes since these ligands, although of the pentahapto type, involve bonding of iron to two carbon atoms.

Part B5 continues with a discussion of iron complexes containing ligands which are bonded to the metal via three carbon atoms, principally η^3 -allyl complexes, but also some heterodiene complexes.

Part C1 of the iron series begins coverage of the dinuclear iron compounds with diiron carbonyl complexes: $\text{Fe}_2(\text{CO})_9$ and its many substitution products. Any organic ligands which may be present are restricted to those bonded to iron via only one carbon atom in the present volume.

By textual description and tabular display, all that is known about the many organoiron complexes covered in these volumes from publications prior to 1977 (Part B2) or mid-1978 (Parts B4, B5 and C1) is imparted to the reader: preparations; physical, spectroscopic (including IR and Raman, NMR, $^{57}\text{Mössbauer}$, mass) and structural properties; chemical reactions. Line formulas and structural figures abound, greatly facilitating use of these volumes. Very useful are the many references to the original literature which are cited, as well as the lists of review articles, book chapters and books which are provided for each major topic. As always, literature coverage is well-nigh exhaustive, which is one of the major strengths of the Gmelin Handbook.

Fortunately, we do not have to wait until the very end of the organoiron series for the indexes. Part B2 brings an empirical formula index and a ligand index for Parts B1 and B2, and such indexes for Parts B4 and B5 are found at the end of Part B5. Part C1 has its own empirical formula and ligand indexes. We can only applaud this useful change in the Gmelin approach to the indexing of the New Supplement Series.

Part B2 will be especially appreciated by the non-German readership since it is written entirely in English, but the other three volumes being considered here are in German. As usual, English translations of the preface, the table of contents, the chapter titles and the section headings are provided. Brief explanations of the indexes also are given in

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English, so the non-German reader should be able to use these volumes without great difficulty.

These four volumes, with their wealth of information on diverse organoiron compounds, will be welcome arrivals on the shelves of all libraries which serve organometallic, inorganic and organic chemists.

Department of Chemistry
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (USA)

Dietmar Seyferth