

Book reviews

Iron-Carbene Complexes Scripts in Inorganic and Organometallic Chemistry, Volume 1

Gmelin-Institut, Frankfurt/Main (ed)

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Springer Verlag, Berlin, 1993

viii + 202 pages: soft cover DM 68.00

ISBN 3-540-56258-3

This is the first of a series of books based on the *Gmelin Handbook of Inorganic and Organometallic Chemistry*. It is claimed that this new series will review selected areas of inorganic and organometallic chemistry in textbook style. Its object is to provide the lecturer, advanced student and research chemist with a digest of the main features of each topic.

The book covers the chemistry and structural aspects of all compounds in which a formally double-bonded carbene (Chapter 1) or vinylidene (Chapter 2) ligand is coordinated to an ^5LFe moiety (where ^5L represents an organic ligand coordinated to the Fe atom by five carbon atoms in an η^5 -manner).

This book is said to contain all the compounds referred to in *Organoiron Compounds* (Vol. 16a of the *Gmelin Handbook of Inorganic and Organometallic Chemistry*) and their most important spectroscopic data.

Chapter 1 gives a good detailed account of carbene complexes and is split into seven main sections. The first four are on cationic complexes, the next is on neutral carbene complexes, the sixth deals with anionic carbene complexes and the final section covers carbene compounds with two carbene ligands. The chapter begins with a brief introduction that explains nomenclature used, then throws the reader straight into the chemistry. As expected, the book is on a high level and assumes a good background knowledge of the subject. The known compounds in each section are listed, along with their preparations (yields), colours and melting points. The main spectroscopic data listed routinely are ^1H , ^{13}C and (if relevant) ^{31}P NMR. Only occasional references are made to IR spectra: more would have been useful. An unspoken aim of the book appears to be to give just enough information for the reader to characterize the compound—this, then, is what is meant by 'important spectroscopic data'. This will be disappointing to many readers interested in spectroscopy, who will be further aggravated by being simply told in the Introduction that more detailed information concerning preparation and references may be obtained from the original version of the *Gmelin Handbook*.

The lack of references is a serious drawback to those readers who do not have easy access to the *Gmelin Handbook*. On the positive side, there are many side-comments on preparations and properties and some

good general remarks on classes of compounds. X-ray crystal structures are presented in 20 of the 23 main figures, and commented on briefly in the text.

The book fails the reader not by what it includes (its contents are good, and in that respect it fulfils its aims) but by giving no indication of what else is known on the compounds. This could have been achieved by tables or words simply listing other spectroscopies or techniques that may have been applied to these molecules. Yes, the book offers a drink but for me it doesn't quench the thirst.

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The Barbier Reaction and Related One-Step Processes Reactivity and Structure: Concepts in Organic Chemistry, Vol. 31

Cornelius Blomberg

Springer-Verlag, 1993 (in English)

183 pages: DM186.00.

ISBN 3 540 57169 8

In 1899 Philippe Barbier described the reaction which was later to be named after him: a one-flask interaction between an organic halide and a carbonyl substrate in the presence of elemental magnesium. Here, Blomberg reviews this rather neglected reaction and similar ones using other metals in place of magnesium. The book itself is in the Springer-Verlag series *Reactivity and Structure: Concepts in Organic Chemistry*. One might argue that the secondary title, 'Related one-step processes', is slightly misleading because the Barbier reaction undoubtedly involves several mechanistic steps; the author, of course, refers to the number of experimental stages involved in the progression from reactants to products.

The book is divided into five chapters, the first of which briefly traces the history of the Barbier reaction from its beginnings, to be found in the classical researches of Frankland carried out in the middle of the 19th century. An interesting feature in this, and subsequent, chapters is the use of direct quotations (or translations) from key research papers. The next two, longer, chapters explore the various synthetic applications of the Barbier reaction and the possibility of replacing the magnesium by other reactive metals such