

Book reviews

Gmelin Handbook of Inorganic and Organometallic Chemistry, 8th Edition, Ni, Organonickel Compounds, Supplement Volume 1, Springer, Berlin and Heidelberg, 1993, pp. 381 + xi, DM 2160.
ISBN 3-540-93681-5.

This volume is a supplement to the 8th edition volumes on organonickel compounds, the last of which was published in 1974. Consequently, this and the presumed subsequent volumes (at least one more is planned) will cover about 20 years of new chemistry. The current volume covers the literature completely to 1990, and in part to mid-1993. As is usual in the Gmelin system, the treatment commences with mononuclear compounds containing carbon ligands bonded to the metal by one carbon atom only, and the present volume deals essentially with compounds containing only one such ligand.

It is difficult to “review” archival volumes such as this in any conventional sense. Suffice it to say, this continues the Gmelin tradition of comprehensive compound-by-compound coverage of classes of compounds, delineated systematically in the classical Gmelin fashion. The presentation is immaculate, and the access to information is relatively easy, though since this volume does not complete the treatment of all the compounds designated by the classes specified, the empirical formula index will appear in Supplement Volume 2.

This is clearly a problem for those requiring only this volume, and prepared to spend the relatively large amount of money on it. It should not matter to libraries, which should be investing in the whole series. As I have stated when reviewing previous volumes, the cost of this volume is high, but compared with the real cost of obtaining the information contained in it, including the price of labour and database access, then it really is not excessive.

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Gmelin Handbook of Inorganic and Organometallic Chemistry, 8th Edition, Os, Organoosmium Compounds,

A2, Springer, Berlin and Heidelberg, 1993, pp. 410 + xi, DM–
ISBN 3-540-93679-3

This volume continues the treatment of mononuclear organoosmium compounds from volume A1, which was published in 1992. The current volume covers the literature comprehensively at least to the end of 1992, and discusses compounds with one-carbon ligands, specifically dicarbonyls, tricarbonyls, and tetracarbonyls, compounds with isocyanides, and compounds with carbenes and carbynes. The volume also contains an empirical formula index and a ligand formula index.

This is another example of the rigorous and comprehensive Gmelin treatment of organometallic chemistry. The standard is remarkably high, and rarely shows that most of the authors are writing in a language which is not their mother tongue. Even then, this causes no problems. The description of the carbene and carbyne complexes as “very actual” may puzzle some English speakers, but this is a minor blemish. The volume lists 90 such mononuclear compounds; very actual, indeed.

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Gmelin Handbook of Inorganic and Organometallic Chemistry, 8th Edition, Os, Organoosmium Compounds, B6, Springer, Berlin and Heidelberg, 1993, pp. 248 + xiv, DM–
ISBN 3-540-93671-8

This volume is apparently part of the B series of osmium volumes, devoted to polynuclear osmium compounds. Paradoxically, though numbered B6 it is the first of the B series to appear. Its immediate companion volume, B5, which is still in preparation, will contain the empirical formula and ligand formula indices, both invaluable for finding one’s way through the assembled data.

The contents of this volume cover trinuclear compounds with bridging one-carbon ligands other than

CO, including carbenes and acyl. In the normal Gmelin fashion, trinuclear means three osmium atoms, so that compounds containing Os_3M ($\text{M} = \text{Mo}, \text{W}, \text{or Pt}$) and Os_3Pt_2 cores are also discussed. Literature coverage is comprehensive to the end of 1992, but there are many citations from 1993. The organisation, and thus to some degree the bias, is in terms of composition, that is to say it deals principally with preparations, structures, and spectroscopic properties. It is not so easy to track down reactivity and mechanism. However, this is not a criticism, merely a comment. These volumes continue to be an invaluable source of information, and should be available to all organometallic chemists.

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The Chemistry of Organophosphorus Compounds, Volume 3: Phosphonium Salts, Ylides and Phosphoranes, Frank R. Hartley (ed.), (in the series *The Chemistry of Functional Groups*, Saul Patai (ed.)), Wiley, Chichester, price £120.00.

The third volume of this four volume series on the chemistry of organophosphorus compounds continues the tradition, established in Volumes 1 and 2, of an introductory chapter by Gilheany (300 references) covering structural and bonding aspects in phosphonium ylides, salts and phosphoranes. Regrettably, however, much of the material relating to the phosphonium ylides is duplicated in the chapter by Bachrach and Nitsche (95 refs), creating the impression that Volume 3 is simply a collection of individual contributions rather than a well planned overview of the subject. This impression is further underlined by the separate (albeit admirable) treatment of the photochemistry of ylides, phosphoranes and phosphonium salts in the chapter by Dankowski (121 refs).

The longest chapter, by Christeau and Plénat, which describes the preparation, properties and reactions of phosphonium salts (910 refs) is very well written and offers a fascinating insight into the uses of these types of compounds. Likewise the chapter by Burgada and Setton (citing 360 references, reviews and books) extensively covers the wide variety of chemical behaviour exhibited by these important 5-coordinate phosphorus compounds, and includes a discussion of their interesting dynamic behaviour.

The topics discussed by Santhanam under the heading 'Electrochemistry of ylides, phosphoranes and phosphonium salts' (58 refs) develop some of the themes of his earlier article in Volume 2 of this series,

but once again the chapter contains information on radical anions in unsaturated clusters of the type $[\text{Fe}_4(\text{CO})_{11}(\text{PR})_2]$ and related cobalt systems which seem totally inappropriate. It is also not clear to this reviewer why the final chapter by Feilchenfeld (403 refs) concerning the chemical analysis of organophosphorus compounds is included in the present volume. Certainly the volume's sub-title gives no inkling that it contains a review concerning the important analytical techniques described here. Furthermore although this chapter competently discusses a comprehensive array of analytical techniques of considerable interest to organophosphorus chemists, it surely should have been included in a different volume of this series.

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Handbook on Metals in Clinical and Analytical Chemistry, H.G. Seiler, A. Sigel, and H. Sigel (eds.), Marcel Dekker, New York, 1994, pp. 753 + xvii, US \$195. ISBN 0-8247-9094-4

This book represents a massive effort by the eminent editors and by the authors. It is written in two principal parts. Part I details briefly the role of metal ions in clinical chemistry and then discusses the collection, storage, transport, and treatment of samples. It concludes with general discussions, replete with basic references, of eight basic analytical techniques. Part II deals with individual metals in 43 separate chapters covering 60 different metals, all within a common frame of chemistry, technical uses, physiology, and analytical determination. Each chapter has a set of basic references. There are, in all, more than 80 contributors.

Considering a couple of chapters at random, Chapter 19 on barium describes the chemistry in only seven lines: it is a dense metal, of little commercial application and many of its compounds are insoluble. Technical uses cover half a page. The physiology contribution is a bit longer, but apparently this element has, as yet, no clear biological function. The analysis recommendations are clear but minimal. There are 22 references. In contrast, iron chemistry requires nearly two pages, and its uses half a page. However, it needs to be recognised that the intention of these sections is not to provide a review but to give enough background for the reader to understand why specific methods of analysis are recommended, and little more. The physiology etc. occupy about four pages, enough to specify something of iron requirements, distribution, and storage in humans, and the effects of iron overload and deficiency. The analyti-