

## Book reviews

*Gmelin Handbook of Inorganic and Organometallic Chemistry*, 8th edition, Rare Earth Elements, Volume 12b, Sc, Y, La–Lu, Compounds with Carbon Springer, Berlin and Heidelberg, 1994, pp. 362 + xviii DM 2,195.  
ISBN 3-540-93689-0

This is not, as one might think, a presentation of the organometallic chemistry of the rare-earth elements. Rather it describes the inorganic carbon derivatives, which includes carbonates, mixed carbonates with alkali metals, thiocyanates and alkali-metal thiocyanates, and cyanides, cyanates, and selenocyanates. Carbides are dealt with in Volume 12a.

The presentation is in the usual immaculate format. The material seems to reflect an earlier age of inorganic chemistry, being mainly of the “prep and pop” variety, and in view of the intention of comprehensive coverage this is probably inevitable. However, the literature is cited until Spring 1993, if not later, though a cursory glance through the extensive reference lists suggests that not much work has been done very recently.

This is the kind of book that is invaluable for reference on the odd occasion. As such, it should be in every respectable library. For myself, it represents the kind of database that is the easiest to use. It will be a pity if the cost should persuade libraries that they can forego volumes such as this.

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*Gmelin Handbook of Inorganic and Organometallic Chemistry*, 8th edition, Molybdenum, Supplement Volume B9, Compounds with Se, Te, Po, Springer, Berlin, and Heidelberg, 1994, (pp. 165 + xvii) DM1, 050  
ISBN 3-540-93691-2

The literature coverage in this latest contribution to the archiving of molybdenum chemistry is to at

least mid 1992. In view of the rather bleak title (as judged at least by an organometallic chemist), this volume is surprisingly stimulating. It should not be necessary to state that the format and style are as good and as comprehensive as one has come to expect of Gmelin productions.

The more general interest arises from the specific compounds covered. For example, the volume begins with selenides, continues with oxyselenides, proceeds through selenide halides and finishes this section with a discussion of compounds of molybdenum with selenium and sulfur, and oxygen or halogens, when they are present.

Although the material is often of the older kind, the realisations that selenium has some biological significance, and that extended inorganic structures may give clues to important biological structures and also exemplify general principles of cluster design, mean that the diagrams are often quite thought-provoking.

The treatment of the tellurium systems follows a similar pattern, and rather surprisingly occupies considerably more space than the selenium material. There are two paragraphs and four references devoted to polonium. There seems to be a challenge there for some brave souls!

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*Inorganic Chemistry*, 2nd edition

D.F. Shriver, P.W. Atkins, and C.H. Langford, Oxford University Press, Oxford, 1994, pp. 819 + xviii, plus appendices £48.00 hardback, £19.50 paperback ISBN 0-19-855397-8 (hardback); 0-19-855396-X (paperback)

This is an excellent textbook. I have taken the liberty of using my review copy for reference and undergraduate teaching in tutorials, and have found it to be of the greatest value. It addresses itself both to students and instructors and seems to be able to

appeal to both sets of people. The text is interspersed with worked examples and exercises, and at the end of each chapter are lists of further reading, a summary of key points, and a further set of exercises and problems. Brief answers to the exercises are provided in one of the appendices. These examples and exercises provide an opportunity for individual study and self-testing.

The material of the book is divided into three major sections, together with some appendices. The first major section is entitled "Foundations" and deals with the usual items of atomic and molecular structure, shapes, structures of solids, acids and bases, essential coordination chemistry, and oxidation and reduction. The discussion of shapes includes an improved presentation of symmetry and an analysis of molecular vibrations.

The second major section of the book is concerned with the systematic chemistry of the elements. A new chapter on metallic elements has been added as compared to the first edition. Clearly the authors envisage that this should be read in the light of the principles expounded in Part 1. The reference to experimental techniques, together with photographs and diagrams of real apparatus, is especially welcome. There is a chapter on Main-group organometallic compounds, though boranes and fullerenes are dealt with only cursorily. What pleased me particularly was the emphasis throughout on systematic and IUPAC-recommended nomenclature, with both the general forms of Periodic Table Group notation used as synonyms.

The last major section of the book is entitled "Advanced Topics". These cover electronic spectra in enough depth for most chemists, reaction mechanisms of d-block elements, transition-metal organometallic chemistry, catalysis, structures and properties of solids, meaning oxides, fluorides, and sulfides, including non-stoichiometric compounds, and a short chapter on bioinorganic chemistry. These chapters are not intended to give complete coverage of their subjects, rather to show how research is developing, and the authors admit that there may be some divergence of opinion about the contents. Nevertheless, I found them easy to read and presented in a very useful manner.

The appendices contain more material on nomenclature, a brief introduction to NMR theory, more information on group theory including character tables, lists of ionisation energies and standard potentials, diagrams of symmetry-adapted linear combinations of atomic orbitals, and Tanabe-Sugano diagrams, as well as the answers to the exercises and the indexes.

This is a well presented book that is a pleasure to read or even to browse through, and in my judgement it will prove to be highly student-friendly. It should be a serious candidate for a principal inorganic text for many undergraduate and less-specialised postgraduate courses.

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*Progress in Inorganic Chemistry*, Volume 42

K.D. Karlin (ed.), pp. 606, John Wiley, New York, 1994, pp. 606 £96 ISBN 0-471-04693-0

This latest volume continues the tradition of varied and authoritative reviews for which "progress" has become esteemed. The present collection starts with a contribution on slow proton-transfer reactions by K.W. Kramarz and J.R. Norton. This includes a brief account of the phenomenon, how and why it occurs in organometallic and bioinorganic reactions, then discusses the extant examples. This is a useful review, but is an end-on bridging dinitrogen really  $\eta^2$ ?

The next review is on oligopyridines in supramolecular chemistry, and is by E.C. Constable, who has contributed greatly to this subject. This is followed by a lengthy review of ternary transition sulfides by B.W. Eichorn. This very much reflects the current interests in solid-state inorganic chemistry, with heavy emphasis on physical techniques.

The next review is the major contribution to this book. It is on transition-metal organoimido complexes, and is by D.E. Wigley. It covers more than 240 pages, and lists 623 references. This really merits a book on its own, and does raise the question to a degree of what the editor has in mind for further volumes in this series. The review is probably the most significant summary of the area since Nugent and Mayer's splendid book. It is detailed and comprehensive. It is full of tables of compounds, and will undoubtedly be an invaluable source of reference. It is also rather densely written, and is not the kind of thing that I find easy to read. It would possibly be more appropriate as a Chemical Review or even as a book in its own right. Notwithstanding these comments, many researchers will be grateful to Wigley for his herculean labours.

The final review is also far from a lightweight effort, being almost 100 pages and citing 369 refer-