



## Book reviews

Gmelin Handbook of Inorganic and Organometallic Chemistry, Eighth Edition, Mo, Organomolybdenum Compounds, Part 13, pp. xi + 253, ISBN 3-540-93744-7, Springer-Verlag, Berlin and Heidelberg, 1996, DM 1540, GB£ 633.50, US\$ 1,084

This volume is the thirteenth volume covering organomolybdenum compounds and continues the description of mononuclear complexes, mononuclear in the Gmelin sense that they contain only one molybdenum atom, though they may well contain other metal atoms. Literature coverage is complete at least until the end of 1993.

The compounds discussed here all contain molybdenum bound by a single  $^6L$  ligand, where L is a six-carbon-atom carbon donor. This includes, for example, seven-membered carbon rings, of which only six carbon atoms are involved in metal bonding. The contents include hydrides and complexes without additional carbon ligands, and then compounds with additional single-carbon donors such as alkyl and CO. The most extensive coverage, over half the volume, is of tricarbonyls. As usual, there is a complete empirical formula index, though to get the most from it the reader will have to acquaint himself with the Gmelin notation. That the volume has taken so long after the literature closure date to appear suggests that perhaps the valiant authors are beginning to be overwhelmed by the flood of literature data, but this does not detract from the value of what has been achieved, and the price, at about DM 6.1 per page, is not any more than that of earlier volumes.

Those who know and use Gmelin volumes will not need reminding of the format or of the comprehensive nature of the coverage. This volume maintains the usual exemplary Gmelin standard of comprehensiveness and clarity. Those who do not know the Gmelin format and style, and are interested in the areas covered, are recommended to acquaint themselves with them. It would be a pity not to take advantage of such a valuable resource.

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Structural and Electronic Paradigms in Cluster Chemistry, ed. D.M.P. Mingos, Structure and Bonding, volume 87, Springer, Berlin, Heidelberg, 1997, 211 pages, hardcover, DM 198, US \$ 129, ISBN 3-540-62791-X

This is a challenging book to read—densely packed with information on a multitude of clusters, together with detailed interpretations of bonding. It is well worth the effort for those researching in this area.

Chapter one lays out the theoretical foundations and exposes concisely the concepts invoked in later chapters. Some areas are dealt with summarily rather than pedagogically.

Chapter two focuses on metal–metal interactions in transition metal clusters in terms of symmetry-based MO theory of metal–metal bonds. Particularly interesting is the discussion of Mo–Fe–S clusters related to the active site of nitrogenase and the Ni-chalcogens associated with hydrogenase type enzymes.

Eight and nine metal atom clusters in cubic and body-centred cubic structures are discussed in chapter three—these do not always conform to electron count or simple MO interpretations. More distorted and even solid state structures, such as  $Co_8S_8$  are discussed, including main group element interstitials.

The fourth chapter deals with clusters centred on a cubic disposition of transition metal atoms, with a common MO analysis combined with electron counting. Structures stabilised by ligands are discussed, culminating in condensed structures and the solid state.

A concise and clear fifth chapter handles the insertion of p-block interstitials into clusters and the impact

they have on Wade's rules, nicely illustrating the isolobal principle. Special attention is given to trigonal prism, bicapped antiprismatic structures and condensed structures.

The last chapter tackles clustering of heavy main group elements without stabilisation by ligands and includes a small selection of solid state examples. Many clusters are mapped onto the pathway from tricapped trigonal prism ( $D_{3h}$ ) to the uncapped Archimedean antiprism ( $C_{4v}$ ), and some are fluxional between the two.

A few lapses in English and spelling do not detract from the substance of a book which will be essential reading for research students or final year undergradu-

ates specialising in the area. Certainly it is a suitable text for those with a grounding in organometallic chemistry who are curious about what is termed within the book 'inorganometallic' chemistry. For those unfamiliar with the area, check out Wade's rules first or read the book twice!

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