

Book reviews

Aqueous Organometallic Chemistry and Catalysis, NATO ASI Partnership Sub-Series 3, High Technology Vol. 5, by I.S. Horvath and E. Joó (eds.), Kluwer Academic, Dordrecht, Netherlands, 1995, pp. 336 + xviii, US\$ 190, GB£ 117, ISBN 0-7923-3703-4

This book, as others in the series, is based on a NATO Advanced Research Workshop held in Hungary in August 1994. As such it runs the risk of including half-digested information in posters and short communications that do not really deserve to be published in definitive form alongside more substantial contributions. The editors have ensured that this is not the case, and have produced a book that will certainly be of value for some time.

In a foreword, Professor Horvath expresses the hope that the Workshop will be a recognition of the contribution made by Hungarian chemists to this subject, and that it will also foster the development of beneficial change in Hungarian science. In so far as the first point is concerned, the ten or so contributions from Hungary show this very clearly. As for the second point, only time and many other influences will tell. One can only wish Hungarian chemistry well.

For many years chemists have tried to cross the apparent divide between the more classical aqueous systems and the non-aqueous systems that have been so important in the development of modern inorganic and organometallic chemistry. Early attempts to do so, such as our own to hang water-solubilising groups on the edges of tertiary phosphines, were worthy but perhaps naive. This book provides a good picture of how much further the subject has advanced. There is a discussion of olefin metathesis in aqueous solution, in which it is shown that water is not always completely innocent of catalysis of alkene insertions into metal–hydrogen bonds in water, and of radical chemistry in aqueous solutions. The contents also deal with reactions in biphasic systems, including carbonylations and carboxylations. In fact, a whole range of organometallic chemistry that was developed in non-aqueous systems can now be carried out in the presence of water, and this has political as well as chemical attractions.

Much of the chemistry described still uses phosphines, but the more novel extensions of the subject are towards biphasic systems, membranes, and bioinorganic

chemistry, and these receive considerable emphasis. As might be expected, the contributions presented in this part of the book are of varied quality and some are more chemical than others. However, the collection demonstrates clearly the vast range of aqueous organometallic chemistry. Some of the papers, the more specific, will lose their interest for the specialist quite rapidly. Others have more review material, and these will remain of value to more readers for a much longer period.

The editors and Workshop organisers have done a good job. It would have made an even better impression if some attempt had been made to ensure a consistency of style and presentation. The book provides an interesting over-view of a rapidly developing subject, and should be consulted by anyone wishing to learn about this area of research. Unfortunately, the price will certainly inhibit many who would wish to purchase a personal copy.

G.J. Leigh
*School of Chemistry, Physics
and Environmental Science
University of Sussex
Brighton BN1 9QD
UK*

PII S0022-328X(96)06792-7

Gmelin Handbook of Inorganic and Organometallic Chemistry, Eighth Edition, Supplement Volume B3, Au, Springer-Verlag, Berlin and Heidelberg, 1995, pp. xxii + 400, DM 2540, ÖS 17 855, SFr 2132, ISBN 3-54093719-6.

This new Gmelin volume, subtitled “Compounds with Si, P, As, Sb, Bi, the alkali metals, and onium ions” is not of direct interest to organometallic chemists. In the Gmelin system, “compounds” includes materials and species such as alloys and clusters in the vapour phase, so that, for example, the treatment of gold and silicon considers nothing of a stable molecular kind. Gold and phosphorus does discuss compounds that might be useful as starting materials, such as $[\text{PCl}_4][\text{AuCl}_4]$, but no organometallic compounds. Later haloaurates are

presented in the usual exhaustive fashion, and even mixed species such as $[\text{AuCl}_2(\text{CN})_2]^-$. In summary, a useful volume with background information, but not essential to the organometallic chemist's reference library. The cost, at just over 6DM per page, is no more than might have been expected making the most optimistic assumptions about inflation. Clearly Gmelin are holding down their costs to an unexpected degree!

G.J. Leigh
School of Chemistry, Physics and Molecular Science
University of Sussex
Brighton BN1 9QJ
UK

PII S0022-328X(96)06858-1

Gmelin Handbook of Inorganic and Organometallic Chemistry, Eighth Edition, Part B8, Os Organoosmium Compounds, Springer-Verlag, Berlin and Heidelberg, 1995, pp. xii + 197, DM 1230, ÖS 8979, SFr 1071, ISBN 3-540-93725-0.

This new Gmelin volume discusses all the tetraosmium organometallic compounds. Most of these are tetranuclear, but some also contain additional transition metals and these are listed in a table at the end of the book, as well as appearing in the text. The volume should be of immediate appeal to researchers interested in polynuclear metal carbonyls. The literature is covered at least until mid-1994, and that in itself is quite an achievement, in view of the great activity in this area of chemistry.

The compounds described are mainly, but not exclusively, based upon tetrahedra of osmium atoms. The arrangement is logical, starting with compounds containing six Os–Os bonds, through five, four, etc., to the single compound without any Os–Os bonds, and finishing with a few compounds of unknown structure. Within these groups, the arrangement follows the usual Gmelin pattern based upon the number of carbon atoms used to bond ligands to osmium. The predominant ligand is, of course, carbon monoxide.

The book contains many structural diagrams to illustrate the individual compounds, and it concludes with an empirical formula index and a ligand formula index, which ensure that any particular compound can be traced very easily. The book suffers from the usual drawback of structure-based compendia, but because it is comprehensive the other kinds of data are still accessible. Surprisingly, the editors have not followed IUPAC recommendations as to the use of square brackets in formulae, but that is only likely to worry a limited number of people, such as myself. The cost, at rather more than DM 6.2 per page, is a slight increase in page price compared with previous volumes. It is still considerably cheaper than a fully charged computer search and data compilation.

G.J. Leigh
School of Chemistry, Physics and Molecular
Science University of Sussex
Brighton BN1 9QJ
UK

PII S0022-328X(96)06857-X