Book Review

Inorganic Syntheses, Volume 29

Russel N. Grimes, Editor-in-Chief, published by John Wiley & Sons, 1992, 427 pp., £ 43.95, ISBN 0-471-54470-1.

Together with the other volumes in the series, this book provides checked and detailed procedures for the syntheses of several compounds of interest in areas of inorganic and organometallic chemistry.

The scope is rather broad, including not only traditional but also current fields such as the syntheses of superconductors. Moreover, apart from areas with a wide number of active researchers, some specialized and promising fields have also been visited, namely the chemistry of rare gases and of metal–non-metal clusters.

Chapter 1 on 'Main Group Compounds' describes the syntheses of rare-gas compounds as well as of thiolato and selenolato derivatives of main-group metals (indium, tin), tin–phosphinate clusters and SF_5-containing fluoro-olefins. In particular detailed preparative procedures for some ambient-pressure superconducting synthetic metals are given.

Chapter 2 is on 'Boron Compounds'. Among others, the syntheses of several organoboron–chalcogen compounds is presented. In the field of carboranes, besides the syntheses of several decaboranes, the preparation of some small carboranes and correspondent mono and dianions in a new, safer and relatively high yield route is described.

The following chapter concerns 'Transition Metal Coordination Compounds'. It deals with new dehydration methods for transition metal chlorides as well as with the preparation of solvated transition metal monomers (divalent metals) and binuclear compounds (Rh). Moreover, apart from describing the syntheses of fluoride and fluoro-oxide compounds of Cr(V) and (VI), respectively, it also refers to efficient methods for reducing niobium pentahalides in order to get adequate precursors to a variety of coordination and organometallic complexes of Nb(III) and (IV); it also includes the syntheses of several phosphine complexes of W(0) with labile ligands and of nitrido and oxo complexes of Re(V). Furthermore, a greater emphasis is devoted to Group VIII transition metals, namely through the syntheses of carbonyl compounds of Fe(II) and Fe(0) – the latter by nucleophilic activation of pentacarbonyliron – Ru(II) nitrosyls and Ru(III)–polyamine complexes, optically pure Co(III) compounds, tricarbonyl Co(I) complexes and, finally, Pd–amine and Pt–H complexes.

Chapter 4, on 'Transition Metal Organometallics and Ligands', is concerned mainly with the syntheses of substituted cyclopentadienyl ligands and their coordination to Ti(IV), Mo(IV), Rh(II) and Ir(III); furthermore, it includes the preparation of several complexes of Mo(IV), Re(I) (with optical activity) and U(IV) with the unsubstituted ligand.

In the last chapter (Chapter 5) – 'Cluster and Cage Compounds containing Transition Metals' – the syntheses of molybdenum–sulfur binuclear compounds (Mo_2O_3S, $Mo_2O_2S_2$) or cubane-type clusters (Mo_4S_4) are of particular bioinorganic significance. Also for reference the syntheses of several mixed-metal–gold cluster compounds are given. These could be applied in homogeneous and heterogeneous catalysis.

The book should attract the attention of inorganic and organometallic chemists within a wide spectrum of research interests.

M. Fátima C. Guedes da Silva
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