Journal of Organometallic Chemistry, 117 (1976) C47—C50

Book reviews

Progress in Inorganic Chemistry, Vol. 21; edited by S.J. Lippard, Wiley—Interscience, New York/London/Sydney/Toronto, 1976, viii + 294 pages, $27.70, £15.00.

The eleven chapters of this volume are based on lectures presented at a symposium of the 167th meeting of the American Chemical Society which honored Professors F.A. Cotton and L.F. Dahl, recipients of the 1974 A.C.S. Awards in inorganic chemistry. The contributing authors adopted the style of Accounts of Chemical Research, that is, the work discussed originated in general from their own laboratories. As such the chapters are short and are not intended to be the comprehensive critical reviews generally associated with the Progress in Inorganic Chemistry series; they contain relatively few references.

Four chapters are of direct interest to organometallic chemists. An important discussion of the charge-equalizing role of the "semi-bridged", or unsymmetrical edge-bridged carbonyl groups frequently observed in polynuclear metal carbonyls, evolves out of an interesting personalized account of Professor Cotton's recent studies in structural carbonyl chemistry. R.F. Fenske contributes a straight-forward review and analysis of correlations of photoelectron spectral data and molecular orbital calculations. In so doing he points out that series of compounds such as those found in organometallic chemistry serve as useful probes of the validity of such correlations. A short survey of the synthesis, structure, and properties of isocyanide and cyanide complexes of molybdenum-(IV) and -(II) is presented by S.J. Lippard. A chapter on organometallic sulfur cluster compounds (P.J. Vergamini and G.J. Kubas) deals primarily with $[CpFeS(SR)]_2$ and $[Cp_4Fe_4S_6]$.

In keeping with the interest and, in some cases, inspiration of the honorees, several strictly inorganic chapters are devoted to polynuclear complexes including those containing amino- and iminoalcohol ligands (J.A. Bertrand and P.G. Eller), d^8-d^{10} metal ion complexes with sulfur-containing ligands (J.P. Fackler, Jr.), cationic clusters of post-transition metals (J.D. Corbett), and rhenium and molybdenum halide clusters (R.A. Walton). The latter chapter includes observations on the redox behavior as well as ESCA measurements of such metal halide clusters. In addition, two chapters discuss work on magnetic exchange interactions, in dimeric copper(II) carboxylates (R.J. Doedens) and in di- and trimeric β-polyketonate complexes of Cu, Ni, and V (M.D. Glick and R.L. Lintvedt). A bio-inorganic role of polynuclear complexes is presented in C.E. Strouse's description of chlorophyll aggregates in photo-synthetic organisms.

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