

Book Review

M. Hargittai and I. Hargittai: The Molecular Geometries of Coordination Compounds in the Vapour Phase. Amsterdam – Oxford – New York: Elsevier Scientific Publishing Company 1977. 275 pp., price: U.S. \$30.25.

This book is a revised English version of a Hungarian book which appeared in 1974. The term "Coordination Compounds" is interpreted in a very broad sense; all molecules that can be brought into gas phase seem to qualify. After a short introduction on the determinations of structures by Electron diffraction and Microwave spectroscopy the molecules are treated under the headings: Addition compounds, Electron-deficient molecules, Halogen bridging complexes, Salts of oxy-acids, Polymeric oxides, Hydrogen-bonded complexes, Transition metal complexes of π -acceptor ligands and Metalloenes. An author and a formula index conclude the book.

This is of course not a book which is to be read from cover to cover. Rather one can sample compounds – what is the structure of this or that species? Most molecular structures are of course without interest in themselves. Only by comparison is it possible that some interesting features may appear. I was therefore a bit surprised for instance to see a reference to Morino and Uehara: "Vibronic Interactions in Vanadium Tetrachloride by Gas Electron Diffraction" (J. Chem. Phys. 1966) only for a Ti-Cl distance. The whole point of this paper, namely that a vibronic interaction is present in VCl_4 and not in $TiCl_4$, is not mentioned by the authors. This is one of the few instances where a structure determination in gas phase really has given a result which could not have been obtained in the solid phase.

The comparison of the structures of the same compound in the vapour phase and in the solid state can be very fascinating. The present volume seems to be the first which has attempted to review those structures which have been determined by electron diffraction. As such it should be of interest to structural-minded chemists. However, seen from a theoretical point of view it is only of marginal interest, and provides only the raw material.

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Received May 27, 1977