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Book review

Phosphine, Arsine and Stibine Complexes of the Transition Elements, by
C. A. McAuliffe and W. Levason, Elsevier Scientific Publishing Co.,
Amsterdam/New York, 1978, xiv + 546 pages, \$84.50, Dfl. 190.00

This book provides a comprehensive review (2703 references) of the subject from 1972 through mid-1977 and thus represents a sequel to an earlier book to which both of the present authors were contributors. The book is divided into eight main parts. Chapter I (35 pages) reviews the syntheses and chemical and physical properties of many of the most commonly used ligands. Representative synthetic methods are illustrated by a wide variety of examples. The generality and limitations of the various syntheses are also discussed. Experimental details are brief but entirely adequate since extensive reference (266 references) to the original literature is made available for the interested reader.

Chapter II (33 pages) briefly outlines the general types of synthetic methods used to prepare transition metal complexes of P, As, and Sb ligands. Also included is a short discussion of the application of various spectroscopic techniques to the characterization and study of such complexes. Unfortunately, nearly half of the latter area is devoted to Mössbauer spectroscopy, a feature which could easily give the uninitiated reader a distorted picture of the relative importance and usefulness of the various physical methods available.

The next four chapters consist of an extensive survey of specific transition metal complexes categorized as follows: complexes of monodentate ligands (Chapter III, 143 pages); complexes of bidentate ligands (Chapter IV, 98 pages); complexes of multidentate ligands (Chapter V, 46 pages); phosphite, phosphonite, phosphinite and amine-phosphine complexes (Chapter VI, 28 pages). Preparations, reaction

chemistry, and spectroscopic and structural results are summarized in a systematic fashion with each chapter subdivided by metal.

The last two main parts of the book are devoted to important areas which have been developed primarily during the time period surveyed. Chapter VII (30 pages) reviews the reactions of coordinated group 5 ligands and includes an excellent survey of the now widespread cyclometalation reaction. Appendix I (10 pages) summarizes the role of phosphine complexes in catalysis. Although the primary emphasis is on homogeneous systems, polymer-supported heterogeneous systems are also discussed.

In summary, this comprehensive and reasonably up-to-date book should prove to be quite valuable to inorganic and organic chemists working with transition metal complexes of the group 5 ligands. The book was produced by offset printing from a typewritten manuscript. Unfortunately, both the reproduction and binding are of inferior quality. These shortcomings are particularly annoying in view of the exorbitant price of the book, a fact which will undoubtedly limit the book to chemistry libraries.

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