Book Review

Organometallic Chemistry of the Transition Elements

By Florian P. Pruchnik (University of Wroclaw, Poland), translated from Polish by Stan A. Duraj (Cleveland State University, OH, USA), published by Plenum, New York, 1990, XVI+757 pp., US $ 150.00, ISBN 0-306-43192-0.

This comprehensive volume brings together in one place a survey of the entire body of research in Organometallic Chemistry of the Transition Elements. The synthesis, properties, structures, reactivities, applications of various organometallic compounds as well as the results of physicochemical research methods, are well analyzed.

This is a book written for students as well as those more experienced in this area: specialists practising organometallic chemistry, chemists working in all areas of the subject, including those concerned with catalysis and organic synthesis, applied scientists and biologists.

The book begins with a brief look at the general principles of organometallic chemistry. The other chapters are concerned with the main topics in the fundamental organometallic chemistry field, i.e. Metal Carbonyls (chapter 2), Metal–Metal Bonds and Clusters (3), Compounds Containing One-Electron Carbon-Donor Ligands (4), Carbene and Carbyne Complexes (5), Compounds Containing Two-Electron π-Ligands (6), Complexes Containing Three-Electron π-Ligands (7), Compounds Containing Four-Electron π-Ligands (8), Compounds Containing Five-Electron π-Ligands (9), Compounds Containing Six-Electron π-Ligands (10), Complexes Containing Seven- and Eight-Electron π-Ligands (11), Isocyanide Complexes (12), and Application of Organometallic Compounds in Homogeneous Catalysis (13).

The author has carefully chosen the most relevant examples to illustrate the underlying concepts and principles. The book emphasizes cross relations wherever possible and the connection between electronic and molecular structure. As already mentioned, it will be a valuable reference source for anyone working in the general area of organotransition metal chemistry. Since the book covers so much material in a limited amount of space, it does not lend itself to rapid reading.

The book references the literature reasonably well with an average of 200 citations per chapter covering publications up to 1985. The formulas in the reaction schemes are well produced and displayed.

Every chapter contains the preparation, bonding and properties of that class of compounds; particular emphasis is given to analytical aspects (IR, electronic, ^{13}C NMR, photoelectron and mass spectra). These latter subsections in every chapter are very interesting and well written; clear schemes for the spectroscopic data are shown, and it is not just a compilation of data but a well written description of analytical aspects of that class of compounds.

The number of typographical errors, particularly in the reference section, is not excessive, although perhaps more frequent than usual.

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