

Book Reviews

Electron deficient compounds. By K. Wade (University of Durham, U.K.) - Thomas Nelson Ltd. London, 1971, 203 pp. £ 1.95.

The book under review offers an excellent report on the recent state of the chemistry of electron deficient compounds, particularly boron and aluminium hydrides and alkyls. It is designed primarily as a textbook for students who have had a basic course in inorganic chemistry, and who are now ready for a more intensive treatment of this matter. At the end of each chapter a sufficient number of problems was selected to challenge the student.

In the text, a good balance is maintained between preparation and reactions of the described compounds, and their structural features and characterization by modern spectroscopic techniques. Probably, a major emphasis could be given to the reactions of aluminium alkyls with transition metal compounds, due to their importance in the macromolecular chemistry and in the homogeneous catalysis.

In general, this book can be highly recommended, not only to advanced students but also to research people.

Professor Walter Marconi
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Chemistry of Platinum and Palladium. By F.R. Hartley (Southampton University). Applied Science Publ., Ltd. London, 1973. XIII+544 pp. £14.00.

This book is in fourteen Chapters and two Appendix Sections, each Chapter containing a parallel treatment of both platinum and palladium chemistry. The first two Chapters are devoted to general physical and chemical properties and to the stereochemistry as related to oxidation states. Then follow detailed accounts of prominent kinds of complexes such as zerovalent compounds, hydrides, and derivatives of the divalent metals with different ligands grouped according to the type of donor atom. This way of organizing the material adds very much to the clarity and readability of the treatment. Chapter eleven, devoted to substitution reaction, serves as a link to the final part of the book dealing with organometallic compounds. Appendix I, which deals with standard methods for the preparation of complexes is a welcome feature. Appendix II provides a listing of structural data.

The book represents the first successful effort yet to summarize the chemistry of these elements in a way which is profitable for both higher level students and those wishing to start research in the field. The book focuses more on coordination than organometallic compounds and provides a wide coverage of prominent features, so that the reader is allowed to gain a general good insight into what are currently considered the main trends of future development of this field. Somewhat regrettably, more recent material which would have added much to the usefulness of the book also as a reference source is not included.

It can certainly be granted that the Author has succeeded in providing the reader a means of establishing a reasoned parallelism between the properties of two elements the chemistry of which has nowadays overrun the borders of Organic Chemistry itself.

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Electronic Transitions and the High Pressure Chemistry and Physics of Solids. H.G. Drickamer and C.W. Frank. Pp. X+220. London, Chapman and Hall Ltd., 1973, . £ 5.00.

The book's content is divided into the following chapters:

- 1) Introduction;
- 2) Theories of electronic energy levels in molecules and solids;
- 3) Thermal versus optical transitions;
- 4) Phenomenological description of continuous electronic transitions;
- 5) Methods for studying electronic structure at very high pressure;
- 6) Shifts of energy levels with pressure;
- 7) Electronic transitions in metals and insulator-metals transitions;
- 8) Spin changes in iron complexes;
- 9) The reduction of ferric iron;
- 10) Changes of oxidation state and spin state;
- 11) Reactions in aromatic molecules and complexes.

The text covers a lot of the Physical Chemistry of the solids when subjected to high pressures and gives an up-to-date outline of the field and a good review of references. Furthermore, the examples reported are very useful and carefully chosen.

In general, the chapters are very informative and well written. Author and subject indexes are also included.

The book can be useful for the specialists and in general for solid-state chemists and physicists. The coverage seems very adequate and there are details on different experimental techniques. Some minor misprints have been found and some marginal notes can be done, for example as regards the Table entirely covering the page 210 (Appendix), which only reports two well known data.

This book can be recommended to everyone who wishes to get a deeper knowledge of the solid-state phenomena at high pressures.

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