Journal of Organometallic Chemistry, 294 (1985) C26
Elsevier Sequoia S.A., Lausanne — Printed in The Netherlands

Book review

The chemistry of the liquid alkali metals; by C.C. Addison (Emeritus Professor, University of Nottingham, GB) Wiley Interscience, 1984, x + 330 pages, £39, ISBN 0 471 90508 9.

The advent of fast nuclear reactors and alkali metal batteries has led to a rapid development of research into the chemistry of liquid alkali metals. This book is an attempt to make this research more widely known and to bridge the gap between the slight coverage given in most university degree courses and the highly technical specialist discussions of international conferences. The result is extremely readable: physical and metallurgical background is presented in simple terms and inorganic chemistry is shown from a new perspective.

Chapters on manipulation, purification, analysis and electrical properties are linked with discussions of species formed by dissolved elements, solvation, and dissociation, so that the concepts required for understanding at each stage are developed sequentially and logically. There are also chapters on the reactions of liquid alkali metals with water, nitrogen, hydrocarbons, halogen compounds, metals and alloys. These lead to sections on meters for determining hydrogen, oxygen and carbon, surface chemistry and wetting, and applications.

The book is of course not explicitly concerned with organometallic compounds but there are many interesting points for the practical chemist who browses. For example, the successful and safe manipulation of liquid alkali metals, as of many organometallic compounds, requires an atmosphere which is free from oxygen and water: methods are described for blanket gas purification, manipulation of highly reactive liquids, and the removal of traces of alkali metals from glass apparatus. Or again, alkali metals are important reagents in organometallic syntheses: there could be much useful information here for the chemist who needs to investigate the possible role of impurities in influencing the reactivity of a particular alkali metal sample, or who wishes to study in detail the primary reactions by which organometallic compounds are formed from alkali metals.

Professor Addison's book will be read with considerable interest and enjoyment and will contribute to the development of even more applications for liquid alkali metals.

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