

Book Reviews

Dominique Duchine (ed): *Cyclodextrins and their Industrial Uses*, Editions de Santé, Paris. ISBN 2-86411-019-9, 1987, pp. 488.

This volume consists of ten chapters, each written by a leading authority in cyclodextrin chemistry. It provides a comprehensive coverage of the subject which will be invaluable to a researcher in the field.

The fundamentals of inclusion phenomena and aspects of thermodynamic stability in inclusion compounds are treated in some detail in Chapter 1. This is followed by chapters on the synthesis and purification of cyclodextrins and on their various structural aspects. Preparation of inclusion compounds and methods of detecting their formation in the liquid and solid phases are very clearly presented. Chapters on the metabolism and on the pharmaceutical and chromatographic applications of cyclodextrins are extremely informative.

The wider uses of cyclodextrin in industry and the preparation and industrial applications of the various cyclodextrin derivatives, particularly the methylated compounds, are given thorough treatment.

Besides presenting well researched and referenced information about the present state of cyclodextrin chemistry, this volume generates excitement and speculation about the potential for future applications.

College of Technology
Kevin Street, Dublin 8, Ireland

N. R. RUSSELL

József Szejtli: *Cyclodextrin Technology*, Kluwer Academic Publishers, Dordrecht, 1988, pp. 450, ISBN 90-277-2314-1.

As expected from an author who is a leading figure in cyclodextrin chemistry this volume is written with great clarity and authority. Without neglecting the origins of cyclodextrin chemistry it brings the subject right up to its present state.

Chapter 1 gives a thorough account of the chemical and physical properties of cyclodextrins and their preparation and analysis. The preparation of inclusion compounds, methods used to detect the occurrence of inclusion and the changes rendered in the properties of the guest molecules are all given thorough treatment in Chapter 2.

The subsequent chapters present graphic accounts of the applications in the pharmaceutical, food, cosmetics, toiletry and pesticide industries. These are all excellently researched and referenced. A chapter on cyclodextrins as catalysts with selectivity arising from the chiral cavity, also discussing their applications

as phase-transfer catalysts, and in Biotechnology for separation, removal or enrichment of components makes stimulating reading. The final chapter deals with their analytical applications and their uses in diagnostic kits.

*College of Technology,
Kevin Street, Dublin 8, Ireland*

N. R. RUSSELL

L. F. Lindoy: *The Chemistry of Macrocyclic Ligand Complexes*, Cambridge University Press, Cambridge, 1989, 265 pp, £45.00.

This timely text sets out to provide an overview of the main developments in the metal-ion and host-guest chemistry of macrocyclic ligands. The material is pitched at a level appropriate for a senior undergraduate or graduate course and contains useful leading references at the end of each chapter. It is written from the perspective of an inorganic coordination chemist with some emphasis on unsaturated macrocyclic systems. Indeed, the chapter on synthetic procedures for macrocyclic synthesis perhaps places an undue emphasis (perhaps historical?) on, e.g., metal-templated Schiff-base condensations, while not paying sufficient attention to the synthesis of saturated macrocycles by templated (e.g. K^+ for 18-C-6, Li^+ for 14-C-4) and nontemplated routes. Stereochemical aspects of macrocyclic metal complexes are given some consideration but the lack of discussion of the conformation adopted by a macrocycle and its complexes – e.g. the seminal work of Dale (and more recent contributions from Cooper and Hancock) – is a serious omission. Such features are pivotal to an appreciation of a ‘preorganised host’ (exemplified *par excellence* by the ‘spherands’) and to the major contribution conformational changes may provide in determining the enthalpy and entropy of complexation for a given system.

However, these comments do not undermine the utility of this text: it is clearly written in a relaxed style and the lay-out is clear and effective. Separate chapters sequentially detail synthetic procedures, classify and introduce the major types of macrocyclic ligands (e.g. coronands, cryptands, cyclophanes, spherands, cyclodextrins, catenands), and discuss the ‘classical’ metal-ion chemistry of these systems. The thermodynamics and kinetics of complexation are discussed in some detail with some judiciously chosen examples, and the text concludes with chapters on some of the redox properties of complexes (both ligand and metal based) and on some naturally occurring macrocyclic ligands (e.g., porphyrins and the cyclic antibiotics).

It offers perhaps the most useful introduction to macrocyclic chemistry – particularly if you are a chemist with an inorganic bias! – that is available in a *short* text and will be welcomed by *aficianados* and students alike. A less appealing feature is the price, and a paperback version at less than half the price would be most welcome. Then, perhaps, the chemistry of these important ‘unnatural products’ would be more widely appreciated.

University of Durham, U.K.

D. PARKER