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## Book review

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### **Synthesis of macrocycles The design of selective complexing agents**

R M Izatt and J J Christensen (eds)  
John Wiley, New York, Chichester, 1987.  
£57.50. ISBN 0 471 82589 1.

This book constitutes Volume 3 of Progress in Macrocyclic Chemistry and is a fitting memorial to Jim Christensen, who died earlier this year. Macrocyclic chemistry has been recognized in 1987 by the award of the Nobel Prize to J-M Lehn, C J Pedersen and D J Cram, and this book will be a most useful addition to the library of all those with interests in this important field which transcends the traditional boundaries of inorganic, organic, physical and biological chemistry.

The book consists of seven chapters with contributions from DH Busch, LF Lindoy, CD Gutsche, J-M Lehn, S Lifson, F Vogtle and E Weber amongst others. Macrocycles provide excellent ligand systems for the development of reagents having selectivity for ions and molecules, and for the development of complexes with specific properties. These aspects are considered in some detail in Chapters 1 and 4 which deal with 'Ligands designed for inclusion complexes' and 'Design of cation and anion receptors, catalysts and carriers'. In the first chapter the development of superstructural macrocycles capable of complexing

with iron and cobalt, with subsequent binding of dioxygen, are considered.

In Chapter 4 the design of macrocycles capable of specific cation or anion complexation is considered, and illustrated with appropriate examples. Chapter 2 is devoted to the design of macrocycles which interact selectively with heavy metal cations, and discusses kinetic, thermodynamic and structural aspects of this topic. Calixarenes or 'molecular baskets' are capable of interacting with both ions and molecules in an enzyme-like fashion. The chemistry of these systems and their application to ion transport and as models for enzyme-substrate binding are considered in detail in Chapter 3.

Lehn and Patvin discuss the design of cation and anion receptors in Chapter 4 and describe applications as carriers and catalysts. The design of artificial ionophores based on the use of nonactin, enniatin and valinomycin are considered in Chapter 5. The two final chapters consider two-fold bridged phanes and crystalline macrocyclic inclusion compounds.

The book will be very useful to both organic and inorganic chemists with interests in this important multidisciplinary area of chemistry. The text is well produced and well illustrated.

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