

leading on to states of matter and their properties. After this introductory chapter, there follow chapters covering physical chemistry, the chemistry of the elements and analytical chemistry. The final chapter is given over to a series of case studies which take principles discussed in earlier chapters and develop them with reference to specific chemical processes within the environment. Whilst the coverage of the chemistry is concise and subjects are introduced quickly and efficiently the depth which is reached, particularly in physical chemistry, may prove daunting to the non-chemist at whom this volume is aimed. Having said that, the abundance of questions at the end of each chapter should allow readers to check their understanding of the material. Solutions to these problems would have been helpful, however.

Of most potential use to the chemist, for whom this book is of some interest, is the final chapter of case studies. Covering areas such as air chemistry, fresh and sea waters, soils and marine sediments, a number of subjects are discussed which would allow chemistry students to identify where their knowledge can be applied.

On the whole this is a well written book useful to both student and teacher and, with the reservation that some students may find some of the material requires further explanation, can be recommended to anyone embarking on a course in environmental chemistry. As one book in a series it could be part of a comprehensive coverage of the subject. Unfortunately, the information given about the rest of the series is sketchy so it is difficult to envisage where the volume sits in relation to its companions.

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### **Inorganic Materials**

Dermot O'Hare and Duncan W. Bruce (Eds)  
Wiley, Chichester, 1992  
558 pages: £58.00  
ISBN 0 471 92889 5

This is a timely treatise which will be of great use to the inorganic materials community. There are nine distinct chapters with different authors for each, with a very

good balance of topics ranging from electronics materials to clays to biominerals.

Chapter 1 deals with molecular inorganic superconductors such as TTF, TCNQ and a variety of sophisticated analogues such as  $[M(dmit.)_2]$ . It gives a helpful guideline to the structural and electronic criteria required to form a conducting molecular system, together with a full characterization of  $[M(dmit.)_2]$  systems, including band structure.

Chapter 2 is on molecular magnetic inorganic materials and gives the fundamental equations as well as descriptions of magnetic chain compounds, and magnetic long-range ordering of molecular compounds.

Chapter 3 elucidates the concepts of non-linear optics and gives examples of organometallic and coordination compounds displaying nonlinear properties. A number of unrelated materials are grouped together in Chapter 4, which deals with intercalation compounds. Extensive tables are given with numerous examples of the different types of layered compounds with their layer charge and guest species, and in some cases interlayer spacings. The tables are supported by clear diagrams showing structural features of a selected number of these compounds. This chapter is particularly comprehensive.

Chapter 5, on biogenic inorganic materials, describes in fascinating detail the various types of biominerals and how they are formed; it is accompanied by clear descriptions of crystal morphologies.

The traditional area of clay chemistry is described in Chapter 6, which includes novel pillared clays together with numerous examples of clay-catalysed organic reactions.

Chapter 7 addresses conductive polymers, whereas Chapter 8 deals with the more unusual metal-containing liquid crystals, leading on to a description of metallophthalocyanines and metalloporphyrins.

The final chapter is on electronic materials and methods for their crystal growth together with descriptions of the precursors used to synthesize them; the necessary requirements of a precursor are exemplified, providing a basis for this topic area.

This is a clearly written and very readable book which gives a good overview of the subject. I highly recommend it for both final year undergraduates and postgraduate levels.

KATHERINE HUDDERSMAN