

BOOK REVIEW

New Directions in Solid State Chemistry. By C. N. R. RAO AND J. GOPALAKRISHNAN. (Cambridge Solid State Science Series.) Cambridge University Press, Cambridge, 1986. x + 516 pp., \$79.50.

This book presents, in eight varied chapters, recent developments in the broad and ever-expanding field of Solid State Chemistry. Chapter headings include structure of solids, preparative methods, new methods of characterization, structure-property relations, reactivity of solids, and materials design. Using specific examples for particular materials, the authors present technical factors which relate the fundamental physical properties to their intended applications. The solid state includes many diverse materials, inorganic as well as organic, crystalline and noncrystalline; many examples of these materials are discussed at levels which vary from introductory to highly specialized. An introductory description of the structures of solids is developed in the first chapter, whereas a highly detailed and mathematical description of phase transitions is given in a later chapter. The longest chapter (113 pages) presents the important and interesting relationships between the structure of solids and their physical properties (for intended applications). This chapter enables one to understand, from a technical point of view, how to custom-prepare new materials based on structure and properties.

Even though this book was not intended as a

teaching text, it would serve as an excellent reference source for a course in Solid State Chemistry since it complements many of the available texts. The experimental methods and theoretical concepts covered will be of interest to all actively working in this exciting field.

The Appendix contains a complete listing of recent and important references to the technical literature, presented in alphabetical order (by first author) for each chapter. The structure-property chapter has over 200 citations, including some from as recent as 1986. There is also a brief formula and topical index.

The style of writing is very good, but, unfortunately, certain reproductions of complex structures from the literature (for example, Figs. 1.17, 1.31, and 1.32) are lacking in clarity. The high resolution electron micrographs, however, are, for the most part, of good quality. This volume is recommended reading for practitioners of Solid State Chemistry and for those who seek an overall view of this exciting and interesting field of study and research. It will be a valuable reference book for solid state chemists, physicists, and material scientists because of its comprehensive coverage of the topic—practical as well as theoretical.

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