tion for the newcomer only if the reader already has some background in crystalline solid-state physics. The good survey of the present knowledge of many aspects of properties of amorphous materials, with a detailed list of references to the original literature and the inclusion of several tables of physical parameters, make this book very useful for all those professionally involved in the amorphous domain.

The contents of the book are divided into seven chapters, which deal in turn, and in excellent detail, with: the preparation of amorphous materials; thermodynamic, kinetic and other factors (including glass transition phenomena) that influence ease of glass formation; the structure of amorphous materials, including methods for finding structure (diffraction of X-rays, electrons, neutrons) and the techniques (such as NMR and spectroscopy) that supply indirect information; the dynamic behaviour of atoms in the glassy state, including such details as the thermal anomalies that can appear at low temperature; electronic excitations, manifested as transport, or optical properties in amorphous semiconductors, including discussion of those particular glasses having ionic properties that offer the promise of technological applications such as superionic conduction; defects and defect control of the properties of amorphous materials; and, finally, a chapter on amorphous metal (metallic glasses).

It is remarkable how much theory, practical application and detailed example have been incorporated in 380 pages of this excellent work. The author has given the reader a good idea of the vitality of this rapidly expanding branch of solid-state science.

I enjoyed the book. It is carefully produced, fully illustrated with clear diagrams and well arranged tables. With its extensive bibliography, which is substantially complete through to the end of 1982, this book provides very up to date information in fundamental and experimental amorphous materials physics.

In conclusion, it can be said that this book must be strongly recommended as a sound practical guide for the novice in amorphous-material study and as a handy compendium of new theoretical concepts and practical hints for all those already concerned and familiar with the amorphous state.

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Acta Cryst. (1985). A**41**, 208

Theory of structural transformations in solids. By A. G. KHACHATURYAN. Pp. xiv + 574. Chichester: Wiley, 1983. Price £53.25.

Writing a book on all important aspects of structural transformations in solids, based on unifying mathematical concepts, is a formidable task, even if the view is 'restricted' to metallic systems. The author presents a quantitative treatment of problems related to the formation of the morphology (microstructure) of metals and alloys, summarizing and extending primarily his own and his associates' work (much of which was published previously in Russian), which skilfully combines theoretical methods of elasticity, matrix algebra, Fourier transforms, thermodynamics and the concentration wave approach to ordering and decomposition in order to arrive at meaningful conclusions about the transformation product in diffusion-controlled and diffusionless (martensitic) transformations.

After five introductory chapters on the basic ideas, the six following chapters concentrate on the role of elastic strains in heterogeneous materials. The calculation of strain energy for arbitrary distributions of coherent inclusions allows one to anticipate and rationalize the formation of certain types of precipitate, habitus planes and spatial arrangements. Unfortunately, the experimental literature referred to for comparison is rich, but not very recent (*e.g.* Ni alloys 1969 or earlier, Al-Cu 1963!). A whole chapter is devoted to the results of computer simulations where the continuum approach to strain energy is worked out in detail for several cases. The final two chapters deal with the microscopic elastic theory of defects, *i.e.* discrete atomic displacements around point defects and their mutual interaction. In these chapters, very detailed information can be found, for example, on the interaction of interstitial solutes in b.c.c. metals, and the aspects of ordering and spinodal decomposition in Fe-C martensites are extensively covered from a microscopic point of view.

This book is not for beginners. It will be most attractive to those who are experienced and interested in a mathematical description of crystallographic and strain-energy features of phase transformations. Though the book is intended to be self-contained, the reader should have a good knowledge of concepts in physics (terms like Ising model, mean-field approximation, percolation theory, *etc.* are never properly explained) and a working knowledge of the mathematical tools in order to appreciate the full significance of the work and the lucid cross references to other fields of solid-state physics.

In view of the immense number of equations, the number of printing errors seems very small. The index contains some misleading entries. At least in the reviewer's copy, the reproduction of most of the transmission electron micrographs does not meet current standards.

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Acta Cryst. (1985). A**41**, 208

Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Elastic wave propagation in transversely isotropic media. By R. G. PAYTON. Pp xii + 192. Martinus Nijhoff Publishers BV, 1983. Price Dfl 110, US $42.50.

Electronic properties of doped semiconductors. By B. I. SHKLOVSKII and A. L. EFROS. Pp xii + 388. Springer-Verlag, 1984. Price DM 128.00, US $50.20.