

production of X-rays by synchrotron sources (though only Soviet machines are described here). Furthermore, considerable discussion is provided on detectors, including solid-state and television detectors.

The section on photographic methods describes the usual Laue, Weissenberg, precession methods, and so on. But here again more detail is given than one usually finds in books. It is useful, too, to see a discussion on microdensitometry, a much neglected subject.

In the final section a very full explanation, complete with mathematical formulation, is given about all types of diffractometer geometries. This will perhaps be the most useful section of all to the working crystallographer, as this information is very difficult to get hold of elsewhere.

This book makes a valuable contribution to the literature, although, since it is in Russian, it can only have a limited international appeal. It would be a pity if it were not translated into English. There are 176 diagrams, all of them clearly and simply drawn, and the book is generally well written.

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**Phase transformations in crystalline and amorphous solids.** Edited by B. L. MORDIKE. Pp. v+257. Deutsche Gesellschaft für Metallkunde eV, Adenauerallee 21, D-6370 Oberursel 1, 1983. Price DM 92.00, US \$45.00.

This book is a collection of papers presented at a one and a half day conference which had the form of a discussion meeting organized jointly by Deutsche Gesellschaft für Metallkunde eV and Lehrstuhl für Werkstoffkunde und Werkstofftechnik of the University of Clausthal, 1982.

There are nineteen contributions to the volume which represents a majority of the participants in the conference. The intention of the conference was to allow contact between specialists and this is reflected in the fact that almost all of the papers deal with transformation behaviour in rapidly solidified or rapidly quenched solid metallic materials. The authors are predominantly from European institutions so that the book provides an indication of the work in progress at these centres.

Comprehensive studies of the relaxation processes which occur on annealing metallic glasses are reported with the major emphasis being on structural changes detected by dilatometry. Two of the papers describe dilatometers designed specifically for studying these materials and one instrument is described which allows investigation of specimens in the micrometre size range. Results of studies using direct observations of relaxation effects by TEM, SEM and atom probe spectroscopy with field ion microscopy are also described. The studies of the structural aspects of the relaxation processes are complemented by papers which deal with thermodynamic measurements made principally by differential scanning calorimetry and with mathematical

modelling to examine activation energy and enthalpy of relaxation.

The book is produced by reproduction of typed manuscript with the text in English although in some papers the figures are given with the wording in German.

The book would have appeal to those interested in the general field of rapid solidification processing and particularly those wishing to keep abreast of current techniques and materials being studied.

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**Einfuehrung in die Kristallographie.** By W. KLEBER. 15th ed. Foreword and edited by H.-J. BAUTSCH, J. BOHM and I. KLEBER. 384 pp., 370 Figs., 40 Tables, 2 Appendices. Berlin: VEB Verlag Technik, 1983, Price DM 29.

The 'Kleber' is still one of the classic and very useful textbooks on introductory crystallography. After going through many editions within a period of almost 30 years, this latest (15th) edition has been thoroughly revised again, up-dated, and supplemented with recent literature references (up to 1981). An English translation of the 10th edition of 'Kleber', by W. A. and M. A. Wooster, in 1971, has been reviewed in *Acta Cryst.* (1972) A28, 221. Since that time some major changes have been made, especially in the chapters on crystal chemistry and crystal physics. Various old terms like *UP*- and *M*-resonance structures have been replaced by a more conventional description of the covalent bond and of hybrid orbitals. There is also a modern and better organized presentation of the main structure types, including the silicates, especially chain silicates (but the formulae for anthophyllite and actinolite, on p. 154, are incomplete). One slight criticism here is that most of the old structure drawings are still used. These are quite heterogeneous and, in some cases, not informative: e.g. NiAs, scheelite or CdI<sub>2</sub> with S being assigned as the anion instead of I. Also, a somewhat more comprehensive treatment of polymorphism, compiling the various examples which are scattered throughout the text, might have been desirable.

The title of this book does not point out that it is intended primarily for use in earth sciences and also in material sciences. There is practically no coverage of the huge field of inorganic and organic chemical crystallography. The structure of the paraffins, anthracene and some polymers is discussed on two pages; proteins are not mentioned at all. Of course it is hardly possible to cover all topics of crystallography, crystal chemistry and crystal physics in only one book. This does not impair the value of this clearly written and well organized text.

Compared with the previous editions, there are now five main chapters instead of four, namely: 1. *Crystal symmetry and crystal morphology* (75 pp.), 2. *Crystal chemistry* (70 pp.), 3. *Physical-chemical crystallography* (55 pp.), 4. *Crystal*