

International Union of Crystallography

Commission on Crystallographic Apparatus

Microdensitometer intensity project

Microdensitometers are now widely used to measure the intensities of reflexions from single crystals, particularly where large unit cells are concerned. The Commission on Crystallographic Apparatus has decided to make a study of the performance of existing instruments, similar to that undertaken some years ago for single-crystal diffractometers.

All crystallographers using microdensitometers are cordially invited to take part in the project. Though the main aim is to evaluate automatic instruments, laboratories with manual densitometers can also participate.

Two sets of screened non-integrated precession films containing reflexions with two different spot sizes will be distributed. Each set contains two films with different exposure times. Thus each participant will have to measure four films. The film sets will be circulated as long as they – after inspection – are considered to be undamaged. A standard scale exposed on a film of the same batch will be provided.

The results of the measurements shall be delivered on cards in the form of centered x, y coordinates, indices, integrated intensities and, if possible, estimated intensity errors. In addition scaled intensities from the films with different exposure times should be given.

Crystallographers interested in taking part in the project should contact the following Commission member: Professor Sixten Abrahamsson, Department of Structural Chemistry, Faculty of Medicine, University of Göteborg, P.O. Box, S-400 33 Göteborg 33, Sweden.

Structure Reports

Four more volumes of *Structure Reports* have just been published. With the volumes referred to in the January issue [*Acta. Cryst.* (1976). A 32, 174] they bring this indispensable series right up to date, covering all the literature up to the end of 1973. The latest volumes to be published are:

Volume 34 B, covering the literature for organic compounds for 1969 (viii + 646 pages). Price: 135 Netherlands guilders.

Volume 37 B, covering the literature for organic compounds for 1971 (viii + 768 pages). Price: 185 Netherlands guilders.

Volume 38 B, covering the literature for organic compounds for 1972 (bound in two parts: viii + 562 pages and iv + 570 pages). Price: 260 Netherlands guilders.

Volume 39 B, covering the literature for organic compounds for 1973 (viii + 962 pages). Price: 245 Netherlands guilders.

Orders for these volumes, and for the earlier volumes including those published in late 1974 and early 1975, may be placed direct with the publisher (Oosthoek, Scheltema & Holkema, Emmalaan 27, Utrecht, The Netherlands), with Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A., or with any bookseller. Details of price reductions for personal subscriptions and for standing orders may be obtained direct from Oosthoek, Scheltema & Holkema or from Polycrystal Book Service.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS 2 9 JT, England). As far as practicable books will be reviewed in a country different from that of publication.

Structure–property relations. Vol. 2 by R. E. NEWNHAM. Pp.ix + 234, Figs. 92, Tables 26. Berlin: Springer-Verlag, 1975. Price (cloth) DM 72 (ca US \$ 31.00).

Many ideas are packed into this 234 page review of crystal chemistry and materials science. In addition to conventional solid state topics, several recent effects and applications are briefly described, for example semiconductor lamps, bubble memories and superionic conductors, and the properties of many complicated solids are discussed. Tables and diagrams support terse qualitative descriptions of the phenomena, and there is a sprinkling of formulae, few of which are derived. The overall effect is of a sustained essay giving a broad up-to-date insight into the diversity of solid materials, but there is insufficient detail to explain satisfactorily many of the subtle concepts involved, and the book tends to give the impression that things are much simpler than they really are. Occasional lapses also appear: for example, the units of the diffusion coefficient (a quantity never satisfactorily defined) should be cm^2/sec , not cm/sec in Fig. 26. Though the book cannot be recommended as a

text for solid state courses, it could provide useful background reading to broaden the perspective of graduate students studying some particular branch of materials science and technology.

J. A. D. MATTHEW

*Department of Physics
University of York
Heslington
York YO1 5DD
England*

Crystallography and crystal defects. By A. KELLY and G. W. GROVES. Pp.x + 428, Figs. 274, Tables 42. London: Longman, 1970, reprinted with corrections but without plates in Longman Text Format 1973. Price £ 3.00.

This textbook originates from lectures actually given by the authors, and combines in an original way an elementary exposition of classical crystallography (*i.e.* the structure of

perfect crystals), an introduction to the structure of crystal defects observed in real crystals, surfaces and interfaces, dislocations and point defects, and finally an introduction to the geometrical aspects of deformation by slip, twinning and martensitic transformation.

The table of contents is as follows: Part one – *Perfect Crystals*: Lattice geometry; The stereographic projection and point groups; Crystal structures; Tensors. Part two – *Imperfect Crystals*: Stress, strain and elasticity, Glide; Dislocations; Dislocations in crystals; Point defects; Twinning; Martensitic transformations; Crystal interfaces. Appendices: Crystallographic calculations; Vector algebra and reciprocal lattice; Planar spacings and interplanar angles; Transformation of indices following a change of unit cell; Crystal structure data.

Seen as a book for students in crystallography, this volume provides a reasonable balance between the study of perfect and imperfect crystals. It emphasizes rightly that imperfections are a fact of life for real crystals, which one cannot forget, but that these defects have a geometry of their own, which can be as complex and fascinating as that of perfect crystals.

Within its scope, this book is certainly clearly written, and combines in a pleasing way a simple and practical geometrical analysis with references to actual physical

applications directly useful to crystallographers or metallurgists. It is prudent enough in controversial subjects to still prove correct five years after its initial publication. A set of problems with their solutions for each chapter and a small bibliography make the book very suitable for teaching.

The scope of the book provides of course its own limitations. With its emphasis on structure and geometry, the book does not mention any method of observation, nor practically any physical properties except, for the defects, their energy of formation and their mobility. There is for instance no mention of processes such as strain hardening, creep or sintering. Some chapters have aged, notably those on the mobility of dislocations and point defects and those on surfaces and interfaces, especially the structure of grain boundaries. Finally it is surprising in such a book to see no specific mention, except in a vague reference, to twins with an axis of rotation.

These are however minor criticisms, and the reprinting of this textbook was amply justified.

J. FRIEDEL

Service de Physique des Solides
Université de Paris
Bâtiment 510
91-Orsay
France