Part I (189 pp.) deals with all aspects of the new classification. Most of these chapters have a good historical introduction. The systematic Part II (481 pp.) gives for each species: name, chemical composition, space group, unit-cell dimensions, main interatomic distances, density and hardness. Then follows a description of the structure, of chemical variations, of morphology in qualitative terms and of cleavages. Optical, electric or magnetic properties are not given. For the hardness a new scale is introduced by Povarennykh, ranging from 1 to 10 as does Mohs's scale, but not directly comparable with this.

Minerals with unknown crystal structure are classified on the basis of chemical composition and properties as morphology, hardness and density.

It is hard to expect that this work will satisfy everybody, however rational and straightforward the classification is. Several objections to the presentation can be made: insufficient information about the quantities used as criteria in the classification; formulae are not derived; a subject index is lacking; sometimes different crystallographic settings are used in the description of the structure, the accompanying illustration and the morphology, as on p. 256 (chalcostibite) and on p. 257 (lorandite). Besides there are many small errors. On p. 67 the structural changes 4) and 5) are incorrect and should be replaced by the corresponding entries of Table 15. On p. 190 an Å is seemingly defined as a nm. The illustrations have been taken from many sources, some are original, so their quality varies, but nevertheless Figs. 23, 25 and 26 should not be upside down. On p. 223 the cleavage of sphalerite should read (110), not (111). The translation is well done, but there are very awkward mis-spellings.

Povarennykh's book can be considered as a major contribution to mineralogy. It marks a stage in the development of the mineral classification, clearly based on Dana's *System of Mineralogy* and on Strunz's *Mineralogische Tabellen*. The silicate classification occurring in the latter work evidently served as a model for Povarennykh's classification. Notwithstanding the objections, the book should form part of any mineralogical library.

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Grain boundaries and interfaces. By P. CHAUDHARI and J.W. MATTHEWS. Pp.ix + 622, Figs. 365, 33 Tables. Amsterdam: North Holland, 1972. Price *f* 140.00 (*ca.* US $43.75).

This volume reports the proceedings of a Conference held in New York in August 1971; it has already appeared as volume 31 of *Surface Science* in 1972 and is now issued by North Holland as a separate book. The 27 papers (plus discussion) contained in it have a strong 'metals' bias and include several substantial review papers on recent developments in the field. One third of the papers deal with theoretical aspects of boundary structure and energetics, another third with dislocation structures at boundaries as observed by transmission electron microscopy. The last five papers are concerned with grain-boundary sliding and migration, and diffusion effects.

Many libraries will already possess this volume as a result of their subscription to *Surface Science*. Research groups in physical metallurgy and materials science which do not have access to *Surface Science* would be well advised to obtain a copy.

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Les textures dans les métaux de réseau cubique. By PIERRE COULOMB. Pp.vii + 217, 81 Figs., 8 Tables. Paris: Dunod, 1972. Price 78 F.

It has been some years since the subject of preferred orientation in metals was first put into text-book form. The present volume represents a bold step on the part of the author in view of the ever increasing amount of research and application in this field. The standard of the book is essentially post-graduate but the presentation includes a large amount of fundamental work which should be of interest to final year students.

The foreword places the subject in perspective, differentiating between crystallographic anisotropy and mechanical fibering and attempts to justify the almost complete exclusion of non-cubic metals by quoting world usage.

The commencing chapters on texture and symmetry, representation and determination of textures give adequate coverage of principles and methods available to date. Pole figures are introduced in a way which aids basic understanding. Techniques are discussed in brief rather than in working detail. Further chapters cover adequately the role of defects, quantitative relation of single and polycrystalline properties, deformation of single crystals and formation of textures in polycrystals.

As with experimental methods the author has chosen to review theories in brief but the trend of the book changes slightly as recrystallization textures are presented in review form rather than as a generalization of results. The section on phase transformations might have been more adventurous, especially from a crystallographic approach, in view of increased interest in this variable over the last few years.

The chapters on laboratory and industrial applications will be extremely useful to readers, and the final chapter considers problems encountered in non-cubic metals, single crystals of non-metals, eutectics and composites. A concluding paragraph justifies the merit of the book by quoting specific examples of texture control which have resulted in considerable cost savings over the years.

One major criticism is that the language of publication may restrict interest in the book. For a subject such as this, of world-wide appeal, it should be worthwhile to the publisher to consider an edited version in English.

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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.

Advances in X-ray analysis, Vol. 16. Proceedings of 21st Annual Conference on Application of X-ray Analysis,

Aug. 2-4, 1972. Edited by L. S. BIRKS, C. S. BARRETT, J. B. NEWKIRK and C. O. RUUD Pp.xxi+410, Figs. 230, Tables 39. New York: Plenum Press, 1973. Price $29.00.

Contents

Applications of X-ray analysis to environmental and biomedical studies – J. V. Gilfrich.

Applications of neutron activation analysis to environmental and biomedical studies – H. R. Lukens & J. John.

The application of scanning electron microscopy and energy dispersive X-ray analysis to the examination of forensic paint samples – R. Wilson & G. Judd.

New results obtained with a regular XRF spectrometer and a portable field spectrometer, equipped with a cold cathode electron tube – J. J. Sahores, E. P. Larribau & J. Mihura.

Proportional counter parameters – A. J. Burek & R. L. Blake.

The use of soft X-ray spectroscopy as a tool for studying the surface region of metals and alloys – J. E. Holliday.

Differential photoionization cross section of neon subshells for the X-ray analysis by photoelectron spectrometry – Francois Wuilleumier.

Photoelectron spectrometry: A new approach to X-ray analysis – Manfred O. Krause.

High-sensitivity esca instrument – R. D. Davies, H. K. Herglotz, J. D. Lee & H. L. Suchan.

Sensitivity and detectability limits for elemental analysis by proton-induced X-ray fluorescence with a 3 MV Van de Graff – C. J. Umbarger, R. C. Bearse, D. A. Close & J. J. Malanify.

In vivo analysis of lipid-protein ratios in human muscle by differential X-ray absorption using ^{109}Cd photons – Luther E. Preuss & Frank P. Bolin.

An energy dispersive system for the analysis of trace elements in human blood serum – P. S. Ong, P. K. Lund, C. E. Litton & B. A. Mitchell.

X-ray energy analysis of particulate matter on filter paper – Warren G. Wood, James M. Mathiesen & John S. Mgebroff.

The tetragonal structure of collagen – E. H. Shaw Jr, T. M. Laengle & Howard Coker.

A simple grazing incidence X-ray lens – Lauri Kaihola & James F. McGee.

X-ray spectrometric determination of atmospheric aerosols – Henry Chessin & E. H. McLaren.

Composition and lattice constant evaluation of the garnet system $(Dy,Gd)_3Ga_5O_{12}$ – L. A. Moudy & S. B. Austerman.

New improvements in routine quantitative phase analysis by X-ray diffractometry – J. J. Sahores.

Absorption correction curves obtained from measurements of the production of X-rays as a function of depth – J. D. Brown & L. Parobek.

The processing of energy dispersion X-ray data in a time-sharing computer – Harold E. Marr & William J. Campbell.

Reactions in thin metal films bombarded by the high intensity electron microscope beam – F. M. Berting & K. O. Lawless.

Flash X-ray diffraction systems – Jonathan A. Dantzig & Robert E. Green Jr.

Submicrosecond X-ray diffraction studies – A. C. Mitchell, Quintin Johnson & L. Evans.

Some new methods of precision X-ray spectrometry – K. Das Gupta, Herbert Welch, P. F. Gott, John F. Priest, Sunny Cheng & Edmond Chu.

Miniature X-ray equipment for diffraction and fluoresence analysis – H. K. Herglotz.

Automation of a manual spectrometer by use of a hardwired angle programmer and microcomputer – J. F. Croke & R. Jenkins.

An integrated system for elemental X-ray analysis of materials – J. C. Russ. A. O. Sandborg, M. W. Barnhart, C. E. Soderquist, R. W. Lichtinger & C. J. Walsh.

A rapid fluorescence and energy powder pattern analysis system – Wen Lin.

Use of an automated powder diffractometer for the analysis of rock samples – R. Jenkins & R. G. Westberg.

Evaluation of the energy dispersive detector as a detector-filter system for the X-ray diffractometer – Davis Carpenter & John Thatcher.

Three-dimensional X-ray synthesis – David G. Grant.

Computer controlled X-ray diffraction measurement of residual stress – Carol J. Kelly & E. Eichen.

An X-ray investigation of fatigue behavior of cold worked aluminum – R. W. Gould & C. F. Pittella.

Improved techniques of lattice parameter measurements using two X-ray beams – Seigo Kishino.

Intensity correction factors for X-ray diffraction measurements of residual stress – M. A. Short & Carol J. Kelly.

Crystal distortion associated with magnetic ordering in alpha iron oxide and manganese carbonate – W. S. McCain & D. L. Albright.

The effects of self-irradiation on the lattice of $^{238(80\%)}PuO_2$. II – R. B. Roof Jr.

Crystal data determinative tables. 3rd edition. By J. D. H. DONNAY and HELEN M. ONDIK. Vol. I. **Organic Compounds,** pp.ix+898 Vol. II. **Inorganic Compounds,** pp.ix+1744. Published jointly by U.S. Dept. of Commerce, National Bureau of Standards and Joint Committee on Powder Diffraction Standards, U.S.A., 1972, 1973. Price Vol. 1: $30.00, Vol. II: $50.00.

This work is sponsored by the Office of Standard Reference Data of the National Bureau of Standards and compiled under the auspices of the American Crystallographic Association.

This edition comprises two volumes and is a thoroughly revised and updated work, containing over 24000 entries. Some 7500 carbon-containing crystalline compounds are given in Vol. I. They are listed, within each crystal system, according to increasing values of a determinative number: *a/b* ratio in trimetric systems, *c/a* ratio in dimetric systems, cubic cell edge *a* in the isometric system. Conventional rules ensure the uniqueness of crystal setting.

For each crystalline species the following properties are listed on the first line: axial ratio(s) and interaxial angles not fixed by symmetry, cell dimensions, space group or diffraction aspect, number of formula units per cell, crystal structure (whether determined), measured density, X-ray calculated density. Then come: name of the compound, synonym(s), chemical formula, literature reference, transformation matrix (when the original data had to be recast to conventional cell and setting). Additional information includes some or all of the following: crystal-structure type (if any), goniometric axial ratio(s), crystal habit, cleavages, twinning, colour, optical properties, indices of refraction, optical orientation (except in the anorthic system), melting point, transition point.

Nearly all the data were obtained from original sources. 'Limits of error' on numerical values are quoted from the reference. The data have been tested for self-consistency by means of com-