

Book Reviews

Plastic Deformation of Amorphous and Semi-Crystalline Materials

Edited by B. Escaig and C. G'Sell, 405pp, *Les Edition de Physique, Les Ulis Cedex, France, 1982*

This is a series of lectures given at an international school at Les Houches, France in 1982. The lectures center on polymers and cover a wide area of theoretical and experimental aspects. Some of the topics discussed are mechanical properties, dislocation theory, viscoelasticity glass transitions, plastic deformations, and molecular orientation.

X-ray diffraction is one of the tools used to study these properties. Although there are a number of discussions of X-ray results the lectures do not cover experimental aspects. In general this text is a good introduction with clear expositions that provide an alternative approach to a number of topics covered by textbooks. Unfortunately the absence of an index limits its usefulness as a reference. The stated price is 250 F.F. (approximately \$40).

Nikos P. Pyrros
Hercules Inc.

X-Ray Diffraction of Basic Types of Geological Minerals Layered and Framework Silicates

Edited by V. A. Frank-Kamenetsky, *NEDRA Publishers, Leningrad, USSR, 1983 (In Russian)*

This book describes the characteristic structural properties and diffraction analysis of various silicates, alkali feldspar, feldspars, clays, micas, and related minerals. Extensive coverage is given to the crystallographic/chemical structures of those minerals that can be powdered or can produce single crystals. Practical methods are presented that will allow the reader to study case presentations illustrating isomorphisms, degree of order, twinning, and interlayering. The book presents original data when demonstrating the methods of phase identification and quantitative phase determination.

The subject of mineral composition and degree of order are related to crystallographic changes in the unit cells of the various "building-block" minerals. The genesis of various mineral families is related to characteristic structures.

This book is recommended for professionals working with X-ray diffraction of minerals or concerned with the crystallo-chemical analysis of minerals. It is a useful text for both graduate and under-graduate students.

Marina V. Plat
IBM, East Fishkill, N.Y. U.S.A.

General Announcements

New — Mineral Powder Diffraction File

The JCPDS-International Centre for Diffraction Data is continuing to improve the highly successful Mineral Powder Diffraction File. Now available is a new 2 volume set containing approximately 3,475 diffraction patterns covering 2,800 mineral species and also over 770 minerals newly described since 1980. All data have undergone a comprehensive computer review utilizing the NBS*EXAIDS83 system and have also been reedited with special reference to cell, space group, Z, calculated density, indices of refraction, mineral group, chemical formula, mineral nomenclature, polytype, symbols and indexing.

The Data Book contains copies of the Powder Diffraction File data card in Sets 1-35 of the Powder Diffraction File arranged in alphabetical order. Also included is both an index in PDF number sequence and a mineral group index. The all inclusive Search Manual contains a Hanawalt numerical section, a Fink numerical section, a chemical name section and an alphabetical section by mineral name. The new Mineral Powder Diffraction File in book form will prove to be a valuable asset, not only to libraries and laboratories engaged in mineralogy, but to all individuals and organizations involved in powder diffraction analysis.

Contact the International Centre for additional details. Place your order today to ensure early delivery. Price \$550.

Sales Department
JCPDS — International Centre for Diffraction Data
1601 Park Lane
Swarthmore, PA 19081, U.S.A.
(215) 328-9400

Grants-In-Aid from the JCPDS-International Center for Diffraction Data

Each year the JCPDS-International Centre for Diffraction Data extends financial support in the form of Grants-in-Aid to a limited number of scientists for the provision of X-ray powder data. These grants are intended to supplement existing funded projects involving the preparation and recording of data from new materials. First time grants are usually of the order of \$2,000 to \$5,000 for projects resulting in 10-25 new patterns. Proposals addressing the immediate needs of the powder diffraction community will be given highest priority, especially projects involving organic com-

pounds and materials used in forensic investigations. Materials involved with any new and evolving technologies are also of specific interest.

Grants-in-Aid proposals will be considered from any qualified investigator who can demonstrate expertise in the preparation of high quality powder diffraction patterns, or in the synthesis of high purity materials, provided that such materials are of interest to the Grants-in-Aid Committee. All Grant-in-Aid recipients are required to prepare bi-annual reports on progress and extension of a Grant beyond a given year is contingent on satisfactory performance. Proposals should be submitted in accordance with specified guidelines and new proposals are reviewed in January of each year. A final decision is generally reached in March. All Grants become effective the beginning of the JCPDS fiscal year, currently 1st April.

Guidelines for the preparation of Grant proposals can be obtained from the JCPDS and proposals for grants should be addressed to:

Secretary, JCPDS-International Centre for
Diffraction Data
1601 Park Lane
Swarthmore, PA 19081, U.S.A.

Advanced Ceramic Reference Pattern Program at the National Bureau of Standards

Wong-Ng, W., Hubbard, C. R., and Dragoo, A. L., *Ceramics Division, National Bureau of Standards, Gaithersburg, Maryland, 20899.*

The National Bureau of Standards (NBS) and JCPDS-International Center for Diffraction Data (JCPDS-ICDD) have established a joint 3-year program at NBS to produce high quality X-ray powder diffraction reference patterns. The project was initiated in September, 1986 and it is administered by C. R. Hubbard and A. L. Dragoo of the Powder Characterization group of the Ceramics Division. The project is directed toward the production of X-ray diffraction patterns and data for important ceramic phases which may find applications in electronics, engine components, cutting tools, etc., and it is an integral part of the program at NBS to develop measurement methods and data to further the manufacture and use of ceramic materials.

X-ray powder diffraction is widely used in industry and materials research for characterization of materials. The Powder Diffraction File (PDF) which is compiled, and published by the JCPDS-ICDD is the generally accepted reference for the identification of phases from X-ray diffraction data. The PDF currently consists of 46,000 reference patterns and covers ceramic, mineral, metal/alloy, organic and other inorganic crystalline materials.

The projected expansion of the market for new ceramic materials and the increasing use of computer automation in X-ray diffraction analysis combine to accentuate the needs for improved reference data in the PDF and for the addition of data for new phases. With computer automation of X-ray

instruments, diffraction data of high accuracy and resolution can be obtained rapidly; thus, requiring new and accurate data in the PDF. The NBS study will include a comprehensive review and upgrade of selected borides, carbides, silicides, nitrides, oxynitrides, selenides, tellurides and oxides. A study of reference data for phases of these materials in the PDF indicates that only about 4% of the reference data are of the highest quality since a significant portion of these reference data were measured more than fifteen years ago and have not survived the test of time. The NBS work will provide the JCPDS-ICDD a total of 60 to 70 high quality experimental patterns and 30 to 40 calculated patterns per year.

Samples for X-ray characterization are being sought through collaboration with other research laboratories, by purchase of commercial materials and by synthesis at NBS. Cooperation with the Phase Diagram Project, jointly sponsored by the American Ceramic Society and NBS, has been initiated to identify phases of mutual interest to synthesize selected new phases, and to develop improved editorial procedures for the PDF and the Phase Diagram database.

NBS welcomes contributions of new ceramic phases or the opportunity to collaborate in the X-ray characterization of new ceramic phases. The contributors of samples will be acknowledged in the published data. For further information, please write to:

Dr. Winnie Wong-Ng
A209, Materials Building
National Bureau of Standards
Gaithersburg, MD 20899
Tel. (301) 975-5791

JCPDS-ICDD Recognition Award Program

The JCPDS-International Centre for Diffraction Data is pleased to announce its 1986 Recognition Award Recipients. Initiated in 1985, the Recognition Award Program was created as part of JCPDS-ICDD's continuing endeavor to stimulate user contributions to the Powder Diffraction File. The program requires the submission of 10 or more patterns which are accepted for publication in any one given Set of the Powder Diffraction File. The Contributor is then awarded a "Certificate of Contribution" acknowledging the number of patterns and their Set of publication. In addition the contributor is also awarded his/her choice of one of JCPDS-ICDD's secondary publications, free of charge. The selection is made from the following list of products:

- Selected Powder Diffraction Data for Forensic Materials
- Selected Powder Diffraction Data for Metals and Alloys
- Powder Diffraction Data from the JCPDS Associateship at NBS
- Mineral Powder Diffraction File (Sets 1-35)
- Mineral Powder Diffraction File Group Data Book (Sets 1-29)
- Selected Powder Diffraction Data for Minerals (Sets 1-29)
- Selected Powder Diffraction Data for Minerals — Supplement I (Sets 24-29)

In 1986, seven contributors qualified to become Recognition Award Recipients for their contributions in Set 36. They are as follows:

- Dr. Wanda Brzyska, Professor and Head of the Department of Inorganic and General Chemistry at Marie Curie Skłodowska University, Lublin, Poland. Dr. Brzyska's field of study includes the preparation of new complexes of rare earth elements with organic ligands and also the separation of rare earth elements by ion exchange. Contributing 54 patterns in Set 36, Dr. Brzyska is a second time recipient, also receiving an award for her contributions to Set 35 in 1985.



Wanda Brzyska

- Dr. Wilson H. De Camp II, Food & Drug Administration, Rockville, Maryland. Wilson De Camp is a review chemist in the division of anti-infective drug products of the Food and Drug Administration. He is a specialist in single crystal X-ray crystallography, as well as powder diffraction. His particular interest is in polymorphism of drugs, and its effects on bioavailability. He has investigated both the structural differences between polymorphs and the application of X-ray powder diffraction to the control of polymorphic content in the manufacturing of drugs. Dr. DeCamp has contributed 18 patterns to Set 36.



Wilson H. DeCamp II

- Dr. David F. Rendle, Metropolitan Police Forensic Science Laboratory, London, England. Dr. Rendle is a Senior Scientific Officer in charge of providing X-ray powder diffraction analytical services of forensic specimens to the laboratory of his employment. He has contributed 64 patterns, forensic in nature, in Set 36.



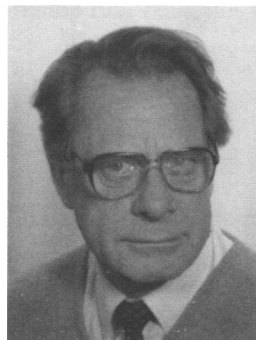
David F. Rendle

- Dr. Raymond B. Roof, Los Alamos Scientific Laboratory, Los Alamos, New Mexico. Dr. Roof has had 35 years of experience in X-ray diffraction, both single crystal and powder work. During the last 12 years, Dr. Roof has been responsible for the powder diffraction files of plutonium compounds at Los Alamos Scientific Laboratory. Set 36 contains 17 of Dr. Roof's patterns.



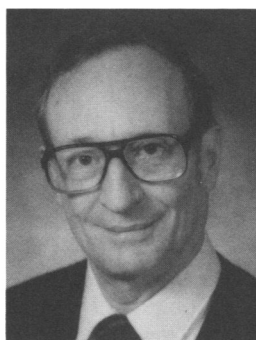
Raymond B. Roof

- Dr. H.-U. Schuster, Universität Köln, Köln, West Germany. Dr. Schuster is a Professor at the Institut Für Anorganische Chemie der Universität Köln whose studies are those of ternary intermetallic compounds with elements of the fourth and fifth main group. He has contributed 29 patterns.

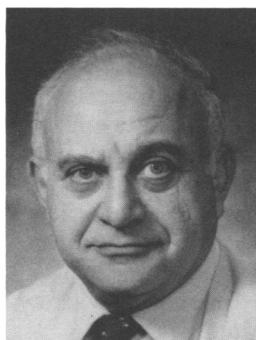


H.-U. Schuster

- Joseph H. Stewart, Jr., Oak Ridge National Laboratory, Oak Ridge, Tennessee. Mr. Stewart, with 15 years of experience in the powder diffraction field, is the group leader of the staff responsible for the submittal of 16 rare earth titanium compounds included in Set 36. Co-workers of this project are Mr. Carlos E. Bamberger and Mr. Harris W. Dunn.



Joseph H. Stewart



Carlos E. Bamberger



Harris W. Dunn

Contributions to the Powder Diffraction File or additional information concerning the JCPDS-ICDD Recognition Award Program should be addressed to Theresa Maguire, Editorial and Production Manager of the Powder Diffraction File at the address below.

Theresa Maguire
 Editorial and Production Manager
 JCPDS-International Centre for Diffraction Data
 1601 Park Lane
 Swarthmore, PA 19081
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Theresa Maguire