The use of either glass or teflon insulators compromises the shielding integrity of the inner shutter wall and, if the wiring is to be protected from scatter, additional shielding may be added. The outer shutter wall, if it is intact, protects the user. The electronic circuit (Fig. 1*b*) depends on normally open contacts so that a relay failure terminates X-ray production. Fig. 1(*c*) illustrates the system logic.

WILLIAM E. CRAMER

Department of Physics Electronic Group
University of Illinois at Chicago Circle
Chicago
Illinois 60680
USA

STEPHEN GUGGENHEIM

Department of Geological Sciences
University of Illinois at Chicago Circle
Chicago
Illinois 60680
USA

ELI A. PORT

Radiation Safety Services Inc.
827 Simpson Street
Evanston
Illinois 60201
USA

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accepted 10 *September* 1981)

Reference

American National Standards Institute (1972). *Radiation Safety for X-ray Diffraction and Fluorescence Analysis Equipment*. Washington, DC: National Bureau of Standards, Handbook 111.

Crystallographers

This section is intended to be a series of short paragraphs dealing with the activities of crystallographers, such as their changes of position, promotions, assumption of significant new duties, honours, etc. Items for inclusion, subject to the approval of the Editorial Board, should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England).

Professor **B. Kamenar**, Laboratory of General and Inorganic Chemistry, Zagreb University, Yugoslavia, was elected President of the European Crystallographic Committee in August 1981, to succeed Dr **O. Kennard** who had been President since 1975. Professor **G. S. D. King**, Laboratory for Crystallography, The Catholic University of Leuven, Belgium, was elected Vice-President and Professor **P. T. Beurskens**, Department of Inorganic Chemistry and Crystallography, University of Nijmegen, The Netherlands, was re-elected Secretary.

International Union of Crystallography

J. Appl. Cryst. (1982). **15**, 139

Division of Acta Crystallographica

Beginning with Volume 39 in January 1983, *Acta Crystallographica* will be published in three sections:

Section A – Foundations of Crystallography
One Volume, six parts per year

Section B – Structural Science
One Volume, six parts per year

Section C – Crystal Structure Communications
One Volume, twelve parts per year.

The new Section C will also incorporate the journal *Crystal Structure Communications*, which was founded by the X-ray crystallography group at the University of Parma and has up to the present been published by the University of Parma.

An Editorial giving the reasons for the new division of *Acta Crystallographica* has been published in the January issues of *Acta Crystallographica*, Section A and Section B [*Acta Cryst.* (1982), A**38**, 1; B**38**, 1].

J. Appl. Cryst. (1982). **15**, 139

Deposition of Crystal Data

At its meetings in Ottawa, August 1981, the Commission on Journals decided that only Titles and Abstracts will normally by printed for Crystal Data from the middle of 1982, *i.e.* for manuscripts received after 1 April 1982. All other parts of the contribution will be deposited with the British Library Lending Division. Copies will be available through the Executive Secretary, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England.

The papers will continue to be refereed. In addition, where appropriate, the data will be checked by the Joint Committee on Powder Diffraction Standards (JCPDS) before publication and assigned a JCPDS reference number, which will be published as part of the Abstract. This will mean that the powder pattern will be included in the Powder Diffraction File at the earliest stage possible.

Where appropriate, a Crystal Data contribution must in future give as much of the information as possible described in "*Standards for the Publication of Powder Pattern Data*" [*J. Appl. Cryst.* (1981). **14**, 216–217]. In particular, the title and Abstract should include: the name (given in the correct IUPAC form) and (if applicable) the mineral name and locality, the chemical purity, the chemical formula, space group (if known), the unit-cell parameters, the volume of the unit cell, Z, the measured and X-ray densities, measurement technique and conditions, radiation used and a description of the powder data and other data deposited. The unit cell parameters, the volume of the unit cell and the measured density should each be accompanied by their e.s.d.

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 LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

J. Appl. Cryst. (1982). **15**, 139–140

Scanning electron microscopy/1980. Parts I and II. Edited by *Robert P. Becker* and *Om Johari*. Pp. part I: xvi + 608; part II: xiv + 658. Scanning Electron Microscopy, Inc., P.O. Box 66507 AMF O'Hare (Chicago), IL 60666, USA. Price US $50 for one part, US $80 for both parts.

The proceedings of the 1980 Scanning Electron Microscopy Conference held in Chicago from 21 to 25 April are published in four parts. Most of the papers of interest to physical scientists and SEM users in general are contained in part I. The papers in part II are of general interest to biologists but a few of these should also be of interest to physical scientists. Parts III and IV contain papers on biological applications, late papers and papers which were not presented at the conference.

Each part includes a related subject index and a major subject index which also includes some relevant papers in other parts.

The 118 papers in parts I and II deal with all the analysis techniques which are normally associated with SEM and STEM (X-rays, Auger electrons, electron energy loss, cathodoluminescence, electron diffraction) and also microscopic techniques like SIMS, LAMMA, PIXE and soft X-ray contact microscopy which enjoy association with SEM while they do not employ scanning electron beams.

The papers in part I deal, amongst others, with subjects of imaging, contamination, electron guns, automation and the structure of conductive coatings, which is very relevant in high-resolution SEM. Useful hints on the application of convergent-beam diffraction are also presented. Environment and forensic (in the wide sense) applications are well represented. The analysis of radioactive particulates from a disintegrated Russian satellite represents an interesting example of both categories.

The growing interest of biological sciences (including biomedical) in SEM and associated microscopic techniques is again evident from the number of papers. Two parts of the 1980 proceedings are devoted to biological applications and the pace is set by the keynote paper on biophysical applications of SEM. The application of the newer techniques like ELS and SIMS in biology is dealt with in review papers.

Botanists can find an extensive bibliography on microanalysis in botany. Laser microscopy and microanalysis find extensive application in biology. Applications of soft X-ray microscopy and the interesting imaging technique using total X-ray signals are also reported by biologists.

The discussions with reviewers which are included with each paper not only contribute significantly to the amount of useful information contained in the papers but also serve as additional sources of reference since a list containing names and addresses of reviewers is included in each part.

The editors succeeded in maintaining a balance between applications, tutorials and review papers which make these books valuable assets for all SEM users. The SEM Inc. conferences are recognized as one of the foremost forums for the reporting of developments and applications in SEM and associated techniques and the 1980 proceedings should take their place as valuable additions to an accepted journal.

J. SMUTS

Materials Research Division
Iscor
PO Box 450
Pretoria 0001
Republic of South Africa

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Characterisation of crystal growth defects by X-ray methods. NATO Advanced Study Institutes Series, Series B: Physics. Edited by *B. K. Tanner* and *D. K. Bowen*. Pp. 589. New York: Plenum Press, 1980. Price US $65.00.

Single crystals play a very important role in modern industry, which needs highly perfect single crystals of a variety of different materials. As a consequence, the interest in techniques for analysing crystal perfection has increased. Among the more sophisticated of these techniques are X-ray methods, and numerous papers and books are being published on this subject. But the book under review has an advantage over others because of the wide range that it covers.

This book is the proceedings of a NATO Institute, held in 1979, in Durham, England. The authors include well-known scientists doing research in crystal growth and X-ray topography. It consists of 25 chapters and is supplied with seven appendices.

Many problems on growth defects and methods of their detection are discussed. The main points for consideration in this book may be divided into two parts.

Firstly, there is a survey of various types of growth defects, the mechanisms of their generation, both in metal (G. Champier) and in non-metal (H. Klapper) crystals, growing by various methods; the problems connected with the industrial applications of crystals (E. S. Meieran); and crystal defect problems from the point of view of the device operation (charge-coupled devices, magnetic bubble memories, surface acoustic wave devices) (A. D. Milne).

The main part of the book is devoted to the investigation of crystal defects by X-ray methods. Emphasis is given to X-ray topography. First of all it is necessary to remark on the clear presentation of the physical basis of the detection of crystal defects by means of X-ray topography: elementary dynamical theory of X-ray diffraction (M. Hart) and analysis of the diffraction phenomena in crystals of various degrees of perfection (N. Kato). A detailed review of transmission X-ray topography is presented (A. R. Lang, J. Chikawa). The basic techniques are discussed: section topography, projection topography, the stereo method, the weak-beam method, and the kinematic image technique for the detection of small defects. The interpretation of X-ray topographs and analysis of different types of defects are described in papers by J. R. Patel, A. R. Lang and J. Chikawa: line and planar defects, precipitations and inclusions.

By contrast, reflection topography is not represented in such detail. Armstrong's paper deals with diffraction contrast and the application of a stereographic projection description for X-ray reflection topography. The panel discussion on reflection topography is reviewed by R. W. Armstrong. Researchers active in this field discuss image contrast in this method, some problems of the double-crystal reflection method and the Berg–Barrett method.

The experimental technique for X-ray topography: X-ray sources (U. Bonse), X-ray detectors (A. R. Lang), sample preparation (D. K. Bowen); is presented in detail. Tables for practical use list characteristic X-ray tubes and storage rings suited for X-ray generation. Synchrotron X-ray sources are widely used today. The use of white-beam synchrotron radiation (J. Miltat) and also monochromatic synchrotron radiation (M. Sauvage) for X-ray topography, as well as problems of control of wavelengths, polarization, time structure and divergence for synchrotron radiation topography (M. Hart), are discussed. Emphasis is laid on the advantage of synchrotron radiation for dynamic and *in situ* experiments (B. K. Tanner). The use of TV systems for X-ray topography is noted (J. Chikawa) and a real-time X-ray topography system for observing the dynamics of defects and strain fields, with a spatial resolution down to 10 μm and a time resolution down to 20 ms, are described (W. Hartmann). The application of synchrotron radiation for absorption microscopy is discussed by D. K. Bowen.

The book also examines the investigation of diffuse X-ray scattering due to point defects (J. R. Patel & J. R. Schneider) and the application of γ-ray diffractometry (J. R. Schneider).

A very useful purpose is served by the paper by M. Hart on the costs of X-ray topography: experimental arrangements for transmission topography and double-crystal methods (X-ray sources, cameras, detectors, commercial apparatus, as well as apparatus built in laboratories) and their cost are described.

The useful exercises in X-ray topography will help students to master the experimental procedures and interpretation of X-ray topographs. There are many excellent X-ray pictures of growth defects in different crystals.

This book is a good guide to the X-ray topographic investigation of crystal defects today and, as such, can be recommended to anyone interested in crystal growth or X-ray topography, and to those who use crystals in various devices. The clear manner of presentation of the