

with a small soldering iron caused the solder to flow, wetting the iron annulus and permanently attaching the foil to the cone. After the cone was soldered to the extension it was thoroughly rinsed with water and alcohol to remove any residual flux.

This work was partially funded by the Ceramics Program, Metallurgy and Materials Division of Materials Research of the National Science Foundation under Grant DMR-78-05930.

R. J. SCHUTZ

Bell Laboratories
Murray Hill
New Jersey
USA

S. WEISSMANN
J. YANIERO

Department of Mechanics
and Materials Science
Rutgers University
New Brunswick
New Jersey
USA

(Received 3 October 1980;
accepted 28 April 1981)

the film cassette is moved along by about 25 mm (this distance need not be measured), and the second photograph (exposure II) is now taken. This is repeated for exposures III and IV, rotating the crystal to $\varphi + 180^\circ$ and $\varphi + 270^\circ$, again moving the cassette after each exposure.

After development, the film, which should resemble Fig. 1, is placed on a rotating-table measuring device of the type used for measuring precession films (Buerger, 1964) with the side of the film which was nearest the crystal uppermost.

The spots closest to, and on either side of, the primary beam on the zero layer line in exposure I are lined up with the hairline on the measuring device, and the table angle, ω_1 , is noted. This is repeated for exposures II, III and IV and the angles ω_2 , ω_3 and ω_4 noted.

Then, if δ_1 is the error in arc A and δ_2 the error in arc B,

$$\delta_1 = \frac{\omega_1 - \omega_3}{2} \quad \delta_2 = \frac{\omega_2 - \omega_4}{2}$$

Also, as a check on the ω values and that the exposures were taken in the correct positions in φ ,

$$\omega_1 - \omega_2 + \omega_3 - \omega_4 = 0.$$

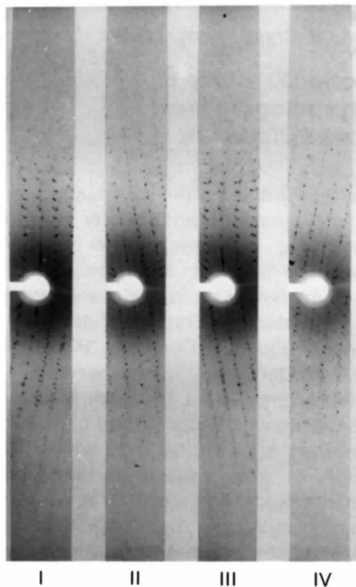


Fig. 1. Oscillation photographs, $\pm 10^\circ$, taken with arc A along the beam, I, and after rotation by 90, 180 and 270° , II, III and IV. For clarity in this oscillation, filtered Cu K α radiation has been used; normally unfiltered radiation is preferable. Corrections required at φ and $\varphi + 90^\circ$ are 4° clockwise for arc A and 8.5° anticlockwise for arc B, respectively.

If δ_1 is positive the correction should be applied in a clockwise direction, looking towards the X-ray source, when the crystal is back at φ or counterclockwise at $\varphi + 180^\circ$, and similarly for δ_2 .

Usually only one film is required because the measuring device, which consists of a bar carrying a hair line in accurately parallel movement and a graduated circle 200 mm in diameter, allows angles to be read with the Vernier scale to $5'$ and precise corrections can be applied if the arcs on the goniometer head are also fitted with a Vernier.

I. R. HANSON*

Molecular Structures Department
Rothamsted Experimental Station
Harpenden
Hertfordshire AL5 2JQ
England

(Received 17 December 1979;
accepted 19 February 1981)

* Correspondence to Professor Mary R. Truter at the same address.

References

- Buerger, M.J. (1964). *The Precession Method*, p. 80. London: Wiley.
Bunn, C. W. (1961). *Chemical Crystallography*, 2nd ed., p. 187. Oxford Univ. Press.
Stout, G. H. & Jensen, L. H. (1968). *X-ray Structure Determination*, pp. 92-93. New York: Macmillan.
Winchell, H. (1950). *Acta Cryst.* **3**, 396.

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 2 HU, England).

Dr J. Karle was elected President of the International Union of Crystallography at the Twelfth General Assembly of the Union, which was held in Ottawa in August. The full membership of the Executive Committee of the Union until mid 1984 is as follows: President - Dr J. Karle, Vice-President - Dr S. Ramaseshan, General Secretary and Treasurer - Professor K. V. J. Kurki-Suonio, Immediate Past President -

J. Appl. Cryst. (1981), **14**, 353

A rapid and accurate method of aligning a crystal on a Weissenberg goniometer

This method, particularly suitable for use with large unit cells, is a combination of double oscillation with displacement (Winchell, 1950; Stout & Jensen, 1968) and measurements at low 2θ angles (Bunn, 1961); it is independent of fiducial marks or location of the direct beam.

After the crystal has been aligned optically, the goniometer head is rotated until one arc (arc A) is perpendicular to the primary X-ray beam and the camera reading, φ , is noted. The layer-line screens are then set in the zero position, with a slit width of approximately 20 mm, or less if the camera design does not permit this, and the film cassette placed on the camera so that the exposed strip is slightly more than 10 mm from one edge of the film. An oscillation photograph (exposure I) is now taken with a small oscillation range. Usually 5 to 10 min exposure is sufficient and even the most poorly diffracting specimens seldom require more than 30 min. The crystal is then rotated so that arc B is perpendicular to the primary beam, i.e. to $\varphi + 90^\circ$, and

Professor **N. Kato**, Ordinary Members – Professor **S. Amelinckx**, Professor **Th. Hahn**, Professor **M. Nardelli**, Professor **H. Neels**, Dr **V. I. Simonov**, Professor **M. M. Woolfson**.

Dr **S. C. Abrahams** was reappointed Editor of *Acta Crystallographica* and Chairman of the Commission on Journals, Professor **M. Hart** was reappointed Editor of the *Journal of Applied Crystallography* and Co-Chairman of the Commission on Journals. Professor **M. Nardelli** and Professor **R. Norrestam** were appointed as Co-Editors of *Acta Crystallographica* and Professor **G. Allegra** and Dr **S. Jagner** have retired. Professor **G. Ferguson** was appointed as Editor of *Structure Reports*, succeeding Professor **J. Trotter** who has retired as Editor of this publication. Professor **M. G. Rossman** was elected Chairman of the new Commission on Biological-Macromolecule Crystallography, Dr **M. J. Cooper** was elected Chairman of the Commission on Charge, Spin and Momentum Densities, Dr **E. Kaldis** was re-elected Chairman of the Commission on Crystal Growth and Characterization of Materials (formerly the Commission on Crystal Growth), Professor **S. Abrahamsson** was reelected Chairman of the Commission on Crystallographic Apparatus, Dr **S. R. Hall** was elected Chairman of the Commission on Crystallographic Computing, Dr **I. D. Brown** was elected Chairman of the Commission on Crystallographic Data, Dr **S. C. Abrahams** continues as Chairman of the Commission on Crystallographic Nomenclature as a result of his reappointment as Chairman of the Commission on Journals, Dr **B. Buras** was elected Chairman of the Commission on Crystallographic Studies at Controlled Pressures and Temperatures, Professor **P. Krishna** was elected Chairman of the Commission on Crystallographic Teaching, Dr **P. Goodman** was elected Chairman of the Commission on Electron Diffraction and Dr **M. S. Lehmann** was elected Chairman of the Commission on Neutron Diffraction.

The full membership of the Commissions of the Union, and the Union representatives on other bodies, will be given in the Report of the Twelfth General Assembly and International Congress of Crystallography, which will be published in Section A of *Acta Crystallographica* in due course.

Professor **P. P. Ewald** was unable to attend the Twelfth International Congress of Crystallography but sent the following message: "Feeling too old for joining in the celebrations of the XII Congress, I still

remain interested in the success of this International Congress of Crystallography. May its dealings not only show the advances in the understanding of the material properties of condensed matter but, beyond this, show how only through world-wide peaceful cooperation a thorough understanding can be gained. I wish you good results for your deliberations".

Professor **E. F. Bertaut**, Director of the Laboratoire de Cristallographie, Centre de Tri, Grenoble has received the degree of Doctor of Philosophy *Honoris Causae* from the Johann Wolfgang Goethe University, Frankfurt.

Professor **T. L. Blundell**, Birkbeck College, London has been appointed Director of the International School of Crystallography at the Ettore Majorana Centre for Scientific Culture at Erice, Sicily.

International Union of Crystallography

J. Appl. Cryst. (1981). **14**, 354

World Directory of Crystallographers Sixth Edition

The Sixth Edition of the *World Directory of Crystallographers and of Other Scientists Employing Crystallographic Methods*, General Editor A. L. Bednowitz, has just been published on behalf of the International Union of Crystallography by D. Reidel Publishing Company, PO Box 17, 3300 AA Dordrecht, The Netherlands and 160 Old Derby Street, Hingham, MA 02043, USA, from whom copies may be ordered direct at a price of US \$10 (25 Netherlands Guilders) post free. It contains short biographical data on over 8100 scientists from 68 countries. The biographical data include full name and title, address, year of birth, highest degree, field of study, university and year of highest degree, present position, telephone number and major scientific interests. There is also a comprehensive name index.

For those crystallographers whose names have not been included in the Sixth Edition and for any whose entries contain errors, Data Entry forms for the Seventh Edition are available from Dr Allan L. Bednowitz, General Editor, IUCr World

Directory of Crystallographers, c/o IBM T. J. Watson Research Center, PO Box 218, Yorktown Heights, NY 10598, USA.

J. Appl. Cryst. (1981). **14**, 354

Delays in Publication

Median publication time for full articles in *Acta Crystallographica* and *Journal of Applied Crystallography* (JAC), based on the elapsed time between final acceptance of manuscripts and their nominal date of publication, has been close to five months in Section A and JAC and four months in Section B in recent years. Short communications and short structural papers have experienced slightly shorter median publication times. It is deeply regretted that publication times will increase later this year to about eight months on average as a consequence of the reduced number of pages that can be published in 1981 without incurring an unsustainable loss, as large and unfavourable movements in international exchange rates have resulted in a substantial deficit in the publication of Volume 36 of *Acta Crystallographica* and have already nullified the effect of the increase in subscription rates for Volume 37. Various alternative procedures for the production of the journals are being investigated with the aim of reducing costs and reducing the effect of variations in exchange rates, and every effort will be made to return to normal publication schedules with least delay.

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. (1981). **14**, 354–355

Crystals: growth, properties and applications, Vol. 3. Edited by *H. C. Freyhardt*. Pp. iv + 163. Berlin, Heidelberg, New York: Springer-Verlag, 1980. Price DM 72.80, US \$ 43.00.

The current importance of III–V compounds for the development of advanced semiconductor devices makes this third