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.

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(Received 3 October 1980; accepted 28 April 1981)


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 one arc (arc B) perpendicular to the primary beam (ϕ + 90°), and 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 ϕ + 180° and ϕ + 270°, 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, ω₁, is noted. This is repeated for exposures II, III and IV and the angles ω₂, ω₃, and ω₄ noted.

Then, if δ₁ is the error in arc A and δ₂ the error in arc B,

\[
\delta_1 = \frac{\omega_3 - \omega_4}{2}, \quad \delta_2 = \frac{\omega_2 - \omega_4}{2}.
\]

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

\[
\omega_1 - \omega_2 + \omega_3 - \omega_4 = 0.
\]

If δ₁ 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 ϕ + 180°, and similarly for δ₂.

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.

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(Received 17 December 1979; accepted 19 February 1981)

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References


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).

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 –