

Laboratory Note

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A simple method for testing X-ray beam uniformity

A pinhole in a thin piece of lead mounted on a goniometer head can be used to check the uniformity of the X-ray beam on a full-circle diffractometer. Beam uniformity must be carefully checked if a monochromator is being used.

X-ray beam uniformity is sometimes measured with a pinhole probe mounted on a stage with graduated orthogonal x, y motions. We find the following much simpler device entirely satisfactory. It consists of a lead disk about 10 mm in diameter and 0.5 mm thick pierced by a sharp needle to form a hole 0.1 mm or less in diameter. The disk is mounted on a goniometer head and oriented perpendicular to the X-ray beam. The pinhole is then centered in the χ circle using the goniometer head adjustments. Beam intensity is measured with the detector at $2\theta=0$, the beam stop removed and the X-ray beam attenuated.

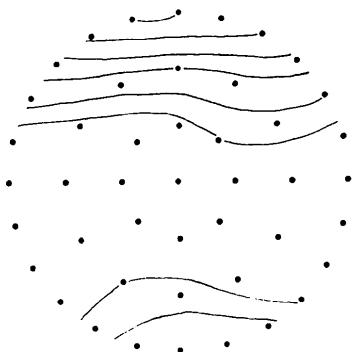


Fig. 1. The dots mark positions at which the intensity of the X-ray beam is measured when the offset and χ settings described in the text are used. The contours mark intensity changes of 5%, the center region is within 5% of the maximum intensity. The beam area surveyed is 0.6 mm in diameter, the monochromator is pyrolytic graphite and the X-ray source is a standard-focus Mo tube operated at 50 kV, 10 mA. The X-ray beam is attenuated approximately 50 times by a 0.006 inch (152.4 μm) thick leaf from a thickness gauge. **CAUTION:** If the pin hole is removed, much greater attenuation is required.

The position of the pinhole in the beam is varied by translating it horizontally using the goniometer head x motion and rotating the χ circle by suitable increments. We find the following settings satisfactory: 0.1 mm offset, $\Delta\chi=45^\circ$; 0.2 mm offset, $\Delta\chi=30^\circ$; 0.3 mm offset, $\Delta\chi=15^\circ$. Intensities are conveniently plotted on polar coordinate paper. Fig. 1 shows contours obtained in this way for an X-ray beam with good horizontal uniformity but further adjustment needed to correct vertical variation.

The advantage of this method is the simplicity of the device required.

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Crystallographers

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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).

Professor **J. D. Dunitz**, Professor of Chemical Crystallography at the ETH-Zentrum, Zürich, has been elected a foreign member of the Royal Netherlands Academy of Sciences.

Dr **David Harker**, Research Scientist Emeritus at the Medical Foundation of Buffalo, received the 1980 Fankuchen Award in X-ray Crystallography and delivered his Award Lecture entitled 'My Life with Symmetry' at the Alabama ACA Meeting on 18 March.

Professor **G. Kostorz** has been appointed a professor of physics with special interest in the physics of metals at the Eidgenössische Technische Hochschule, Zürich. Professor Kostorz is a Co-editor of the *Journal of Applied Crystallography* and his new address is given on the inside front cover of this issue of the journal.

Professor **S. Ramaseshan**, formerly Head of the Materials Science Division of the National Aeronautical Laboratory in Bangalore, India, has been appointed Joint Director of the Indian Institute of Science, also in Bangalore.

Professor **Y. Takéuchi** succeeded Professor **S. Hosoya** as the President of the Crystallographic Society of Japan for the period April 1980–March 1981. The thirtieth anniversary of the foundation of the Society will be celebrated at the Society's next annual meeting, to be held at the University of Tokyo later in 1980.

Professor **Harold W. Wyckoff**, of the Department of Molecular Biophysics and Biochemistry, Yale University, has succeeded Dr **Jenny P. Glusker** as President of the American Crystallographic Association for 1980. Dr Quintin C. Johnson, of the Chemistry and Materials Science Department, Lawrence Livermore Laboratory, Livermore, California, has been elected Vice-President for 1980 and will become President in 1981. Dr **K. Ann Kerr**, of the Department of Chemistry and Physics, University of Calgary, continues as Secretary, and Dr **Robert A. Sparks**, of the Syntex Corporation, Cupertino, California, has been elected Treasurer.

International Union of Crystallography

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Commission on Crystallographic Apparatus IUCr X-ray Attenuation Project

At the International Union of Crystallography Congress which was held in Warsaw in 1978, the Commission on Crystallographic Apparatus decided that there was a need to evaluate the techniques for the measurement of X-ray attenuation coefficients. A committee was set up to organize the project, and planning for the project is now well advanced.

It is the aim of the organizing committee to encourage the participation in the project of laboratories using a diverse range of techniques of measurement. For example, sources of incident X-ray beams which are to be used range from synchro-