International Union of Crystallography

Opening of new Union office

The President of the Union, Professor A. Guinier, together with the Chairman of the Commission on Journals, the General Secretary, the Treasurer, employees of the Union and guests, attended a luncheon in Chester on 7 January to mark the opening of the new Union office. This office, incorporating the office of the Technical Editor and the office of the Executive Secretary, is at 13 White Friars, Chester CH1 1NZ, England. All correspondence for the Technical Editor, Mr S.A. Bryant, and the Executive Secretary, Dr J.N. King, should be sent to this address. Dr King has now taken over the day-to-day business of the Union from the General Secretary and the Treasurer.

Laboratory Notes

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A monochromator for single-crystal X-ray crystallography

Many textbooks on X-ray crystallography discourage the use of crystal monochromators for work on single crystals. The main objection is the serious loss in intensity which is said to be a consequence of the use of a monochromator. It can also be argued that one cannot in general use a singly-bent focusing monochromator to any advantage in single-crystal work using standard X-ray tubes with rectangularly shaped focal spots.

We believed, however, that a monochromator system which allows for precise and easy adjustments could be advantageous even with a plane monochromator and our experience with monochromators on two semi-automatic diffractometers and on two cameras for photographic work has encouraged us to publish our design.

The monochromator allows for variation of the take-off angle and the Bragg angle of the monochromator crystal and it also allows for variation of the angle between the crystal face and the axis of rotation which determines the Bragg angle. Fig. 1 shows the assembled monochromator.

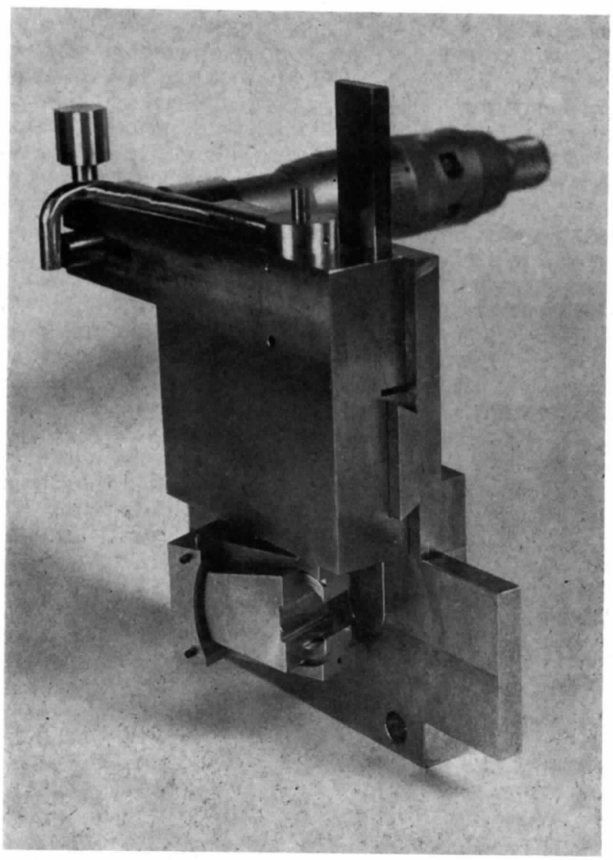

Fig. 1. The monochromator set up without the radiation shielding.

The monochromator housing is machined from brass. The cradle holding the crystal can be coarsely adjusted to the reflecting position by rotation about an axis parallel to the reflecting plane. A selected position can be fixed by clamping the cradle using an Allen pinol screw. Fine adjustment is carried out by turning the clamped cradle about its axis of rotation using a tangent screw. A commercial micrometer screw is used for this purpose. The fine adjustment allows for changing the glancing angle in increments of about 0·01°. The cradle can be rotated about an axis perdendicular to the first mentioned axis using a worm gear allowing for increments of 2° per 360° worm rotation.

The cradle with the monochromator crystal is entirely enclosed. The reflected beam is allowed to leave the enclosure through an adjustable exit aperture. The enclosure is not shown on the Figure. The monochromator crystal can be moved along a dovetail slide fixed on to the X-ray tube holder for varying the take-off angle. The movements are read on an engraved scale with a vernier (1/10 mm).

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