given in this paper, should supplant the Carnarvonshire data now in the JCPDS data file.

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Sample preparation for fluid inclusion studies

AN increasing interest in fluid inclusion studies has created the need for a routine method of sample preparation. For normal thermometric analysis, using an air-conduction heating stage, the specimens are examined in the form of thin mineral plates polished on both sides to ensure maximum optical definition and minimal thermal lag. Various oil-immersion stages have been tried but these are more difficult to operate and are limited by the stability of the circulating medium (Roedder, 1962). Since most inclusions are less than 100μm in diameter the scattering of transmitted light by surface irregularities becomes quite critical. The development of a high polish can therefore be regarded as a prerequisite for this particular technique, and in addition the specimen must neither be mechanically nor thermally stressed.

Disregard of these conditions may destroy or permanently damage the inclusions in low temperature or easily cleaved minerals, particularly those containing liquid carbon dioxide (Larson *et al.*, 1973). The method described below has been developed to meet these requirements.

Method. The specimens to be examined are blocked with cold-setting Araldite resin (MY750/HY956) in 1-in. diameter silicone-rubber moulds. When set, the blocks are secured in a specially designed clamping jig (fig. 1), which is attached to the magnetic chuck of a diamond saw by a vertical steel pillar. This affords firm support and reduces surface shattering of the specimens by the saw blade. Parallel-sided slices 2 to 3 mm in thickness are then removed and lapped on both sides to the required optical thickness on a mechanical lapping machine using a suspension of 600 mesh carborundum in paraffin. These are then transferred to a radially grooved steel lap, where they are given a pre-polish finish using α-aloxite in paraffin. The necessary polish is achieved on a cellulose acetate lap impregnated with 6μm diamond paste, the first polished surface being protected by Sellotape. Finally, soaking in alcohol removes the adhesive protection and cleans the specimens prior to examination.

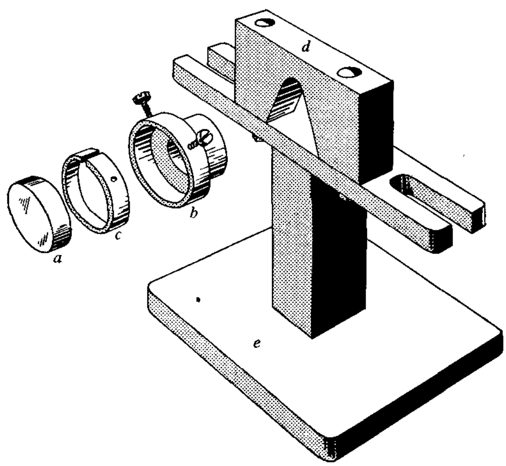

FIG. 1. Exploded oblique projection of clamping jig: The araldite block (*a*) is clamped in a cylindrical metal holder (*b*) by a screw-adjusted split collar (*c*), the shoulder of which is secured by a V-block (*d*) to a steel pillar (*e*); this in turn rests on the magnetic chuck of a rock saw. 1/3·6 natural size.

Discussion. Araldite mix MY 750/HY 965 (100 : 22) was selected because of its low exotherm during setting and ideal mechanical properties. It was also less toxic than alternative Araldite resins.

Thin slices hand-worked on glass plates were found to have greater relief than those produced by means of a steel lap. Further, minerals showing a well-developed cleavage often flexed independently of the resin host during polishing, due to adjustment along cleavage planes. This produced a very uneven polish and was obviated by blocking smaller specimens. At the cutting stage slices greater than the optimum thickness were taken so that subsequent lapping would remove the zone of damaged inclusions adjacent to the cut surfaces.

Although 600-mesh carborundum was used for specimen thinning, the exact particle size is not critical and was chosen as a compromise between minimum surface damage and rapid cutting. On average, eight finished slices can be prepared in a working day.

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