density at 25° C. = 6.70 ± 0.1 which compares favorably with the theoretical x-ray density of 6.67 ± 0.01.

Weissenberg photographs taken on a selected single crystal showed sharp diffraction maxima indicative of well-formed crystals. The cell dimensions determined from these photographs are:

a_0 7.17 Å ± 0.03 Å
c_0 6.43 Å ± 0.03 Å

Cell dimensions determined from precision powder photographs are:

a_0 7.142 Å ± 0.004 Å
c_0 6.327 Å ± 0.003 Å

The detailed results of structural x-ray diffraction studies of this material have been prepared in collaboration with Elizabeth Gebert of this laboratory and appear.

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A SIMPLE FUSION METHOD FOR DETERMINATION OF PLAGIOCLASE FELDSPAR FROM THIN SECTION

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The procedure described below is essentially a modification of the method described by Foster (1955) for determination of plagioclase feldspars by fusion. It is essential in this method to ascertain that the material to be melted is free from inclusions which would cause variation of the refractive index of the glass. Examination of a thin section of the plagioclase will show whether or not that particular section is free of included material. Therefore, it is necessary to be able to fuse a particular section of plagioclase by a method which should be simple to carry out on apparatus readily available to any petrographer.

This method requires that a small flake of the feldspar is melted and rapidly cooled to a glass. This can be done by fusion of the feldspar at the tip of an electrode from which a discharge is passing.

We use a 12 volt battery connected through a switch to the primary terminals of a small induction coil. The coil was obtained cheaply from Government Disposals; it is designated as "Coil, Booster, Battery Operated, Type C1, 24 volts D.C.". This gives a good spark with the 12 volt battery.

One secondary terminal of this coil is connected to a suitable mounted,

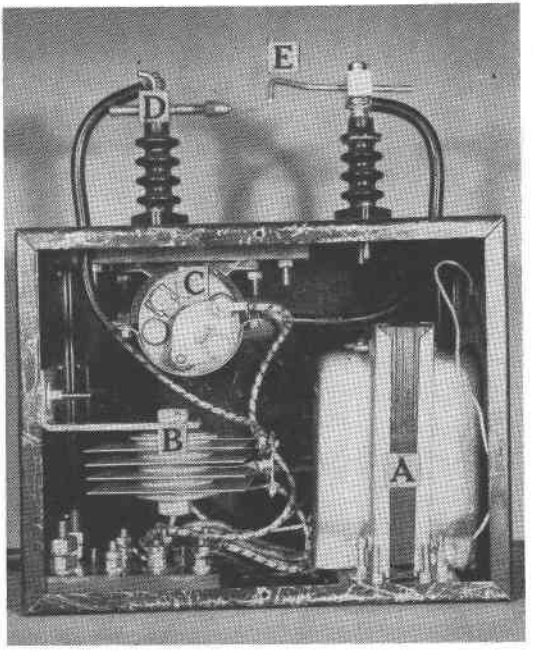

FIG. 1. Apparatus with back cover removed. A = transformer. B = rectifier. C = coil. D = chuck with Pt wire. E = adjustable electrode. Length of case is 9 inches.

insulated electrode which may be just a wire with a pointed end. The other lead from the induction coil is left so that it may be connected at will to the other electrode. This electrode is a piece of platinum wire, about an inch long, mounted in the end of a glass tube (as used for borax bead tests). This glass tube is held in a small clamp so that it may be removed. The end of the platinum wire is bent back a little to carry the feldspar flake.

Procedure: The selected feldspar crystal is removed from the thin section and carefully transferred to the platinum wire. The switch is closed and the spark allowed to pass until the specimen melts and glows brightly. The small glass mass cools very rapidly, but if difficulty in

freezing the melt is experienced, cooling could be speeded up by blowing a jet of cold air onto it. However, so far the author has had no difficulty in this regard. The platinum wire mount is removed and the bead is inspected under the microscope to ensure that it is wholly isotropic. If not, it is returned to the arc for a little longer. Experiment soon shows the most useful distance apart for the electrodes; the platinum can be readily softened, though it is wise to avoid this.

On formation of a glass bead this is then broken away from the wire and the refractive index determined. From this measurement the composition of the plagioclase can be found from the graph given by Foster (1955, Fig. 1).

The limitation of the method depends on the worker's capability to handle small pieces of material. Modifications will be readily apparent to anyone contemplating setting up the apparatus. We now derive our power supply by passing the mains current through a transformer-rectifier, while the platinum wire itself can be removed from its insultated holder.

I should like to express my thanks to Dr. J. P. Webb and Mr. P. S. Upton for their assistance in setting up the apparatus.

Reference

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A DOUBLE ARC GONIOMETER HEAD FOR CRYSTAL ORIENTATION, SAWING AND GRINDING*

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Introduction

Although the double arc goniometer head is a well known crystallographic instrument, units which possess not only adequate versatility for optical and x-ray diffraction orientation work but also sufficient strength to serve as sawing and grinding mounts are uncommon. Descriptions of previous instruments having these features to some degree have been given by A. E. H. Tutton (1), F. E. Wright (2) and M. J. Buerger and J. S. Lukesh (3). It is believed, however, that the goniometer

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