should be specified and checked at the time of purchase—it is that the two plates (the usual accessory mica plate of 155 mμ retardation and the substage Benford plate) have equal retardation. The manufacturer must allow himself some tolerance from the stated 155 mμ value of the plates but can select pairs of matched plates for use with this method of interference figure analysis. The tolerance does not ordinarily come to the attention of the operator in routine work but it is quite noticeable in the use of the two plates and leads to two sources of error:

1. If the two plates are of slightly different retardation 2D is of different value when measured in two positions which are 90° apart obtained by rotating the micrometer ocular. Neither value is correct. This provides the simplest method to test the equipment for matching plates, using a muscovite mount ($2V=44°$) on the stage and a 4 mm. N.A. 0.85 objective. The absolute retardation of the plates is of no concern, merely that they are selected to agree.
2. When one is observing dispersion, this effect can modify the distribution of the color fringes, leading to an incorrect determination of the crystal system and orientation. If, however, the plates are well matched, observations of dispersions in interference figures is both more sensitive and more precise than is possible by the conventional method.

This technique has been in satisfactory classroom use for several years at the University of Wisconsin.

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THE CHALCOKYANITE SERIES

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Some important earlier results on the chalcokyanite series were not reported in the paper of Pistorius (1960). These additional results are:

Chalcokyanite Kokkoros and Rentzeperis (1958)	$CuSO_4$	*Pmnb* $a_0=6.69$ Å, $b_0=8.39$ Å, $c_0=4.83$ Å $a:b:c=0.797:1:0.576$	$Z=4$
Zinkesite	$ZnSO_4$	*Pmnb* $a_0=6.74$ Å, $b_0=8.60$ Å, $c_0=4.77$ Å $a:b:c=0.784:1:0.555$	$Z=4$
Synthetic	$CoSO_4$	*Pmnb* $a_0=6.72$ Å, $b_0=8.47$ Å, $c_0=4.66$ Å $a:b:c=0.793:1:0.550$	$Z=4$

Full structure determinations for $CuSO_4$ and $ZnSO_4$ are given by Kokkoros and Rentzeperis (1958). The Cu, Zn and Co sulfates are isotypic, and diadochic substitution of Cu, Zn and Co is possible. The $MgSO_4$ and $NiSO_4$ form another structure type (Dimaras, 1957, and Rentzeperis and Soldatos, 1958).

At the International Mineralogical Association meeting at Copenhagen in 1960, it was agreed to use the spelling "chalcokyanite." The crystallographic orientation is that of Scacchi (1873) with *a* halved.

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THE OCCURRENCE OF CUSPIDINE IN PHOSPHORUS FURNACE SLAG

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Cuspidine ($3CaO \cdot CaF_2 \cdot 2SiO_2$) is a rare natural mineral which was first described by Scacchi.[1] Since that time the mineral has been synthesized by solid state reaction,[2] from melts[3] and hydrothermally.[4] It has also been observed as a constituent of electric welding slags.[5]

In the present investigation, three types of slag which came from furnaces fed with fluorine containing phosphate rock were examined. The first type was one which had a normal silica/lime ratio of 0.85, the second type was one which had been cooled slowly (1300° C.–100° C. in 35 hours) and which had a low silica/lime ratio of 0.67, the third type was the same as type 2 but the cooling was carried out in six hours. On examination, all three types were found to contain up to 35% of cuspidine. Fig. 1 shows the spear shaped crystals which are characteristic of the compound.

ANALYSIS

It was possible to pick out small quantities of cuspidine crystals from the crushed slags and these were examined optically and by means of *x*-rays.

X-RAY EXAMINATION

Cell dimensions and the space group were determined from a single crystal of cuspidine. The values obtained have been compared with those of Smirnova, Rumanova and Belov.[6]