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USE OF THE BINOCULAR MICROSCOPE FOR ORIENTATION OF SINGLE CRYSTALS

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When orienting crystals for rotation, oscillation, or Weissenberg photographs, it is frequently desirable to bring a cleavage direction or crystal face—if it is normal to a direct lattice translation—perpendicular to the axis of the goniometer. Where a reflecting goniometer is not available, this orientation may be quickly and rather accurately obtained by use of an ordinary binocular microscope.

The goniometer head, with the roughly oriented crystal attached, is placed in an upright position on the stage of a binocular microscope. From this microscope, one ocular is removed and a light directed down the microscope tube. The desired orientation may then be obtained by viewing the cleavage or crystal face through the remaining ocular while adjusting the goniometer arcs to obtain maximum reflection brightness. Settings so derived, generally proved accurate to within 9 minutes of arc.

The method is applicable even if the cleavage or crystal face is of very small areal extent.

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SYNTHETIC POLLUCITES IN THE SYSTEM $Cs_2O\cdot Al_2O_3\cdot 4SiO_2$-$Cs_2O\cdot Fe_2O_3\cdot 4SiO_2$-$H_2O$—THEIR PHASE RELATIONSHIP AND PHYSICAL PROPERTIES: A DISCUSSION[1]

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Recently, Kume and Koizumi (1965) studied hydrothermally prepared members of a solid solution series between pollucite and its iron analog. They reported a different refractive index and lattice parameter for the iron end member than we did (Kopp *et al.*, 1963):

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	Index of refraction	*Lattice parameter*
Kume and Koizumi (1965)	1.609 ± 0.002	13.816 Å
Kopp *et al.* (1963)	1.572 ± 0.002	13.66 ± 0.03 Å

The reader might draw the wrong conclusion from the statement by Kume and Koizumi that the lattice parameter and index of refraction reported by us " . . . do not correspond to those of Fe^{3+} end member but are close to those of $Cs_2O\cdot(Al_2O_3)\frac{1}{2}\cdot(Fe_2O_3)\frac{1}{2}\cdot 4SiO_2\cdot Aq.$" While it is possible that the refractive index and lattice parameter for our iron pollucite might correspond to such an intermediate phase it should be understood that no aluminum compounds were used in the starting materials for our experiments. Spectrographic and chemical analyses of our synthetic iron pollucite establish that less than 0.05 wt % aluminum is present. The index of refraction of the isotropic phase was redetermined. Most fragments fall in the range $n=1.572-1.576$, the slightly higher values generally being associated with slightly darker crystals.

Variations in two factors might account for the observed differences reported by Kume and Koizumi. The first involves the substitution of silicon for iron and cesium. Chemical analysis, as stated in our paper, indicated less iron and cesium but more silicon than theoretical iron pollucite should contain. It was noted that, " . . . according to Winchell and Winchell (1951), pollucite analyses often are high in silicon relative to cesium and aluminum. The silicon ion may replace an aluminum ion and a cesium ion, thus maintaining electrical neutrality." This factor alone might account for the reported variation. For example, the zeolite, phillipsite, varies from α about 1.48 (for the most siliceous crystals) to 1.51 (for the least siliceous crystals) (Winchell and Winchell, 1951).

A second factor is the water content of the crystals. While ideal pollucite contains no water, both Kume and Koizumi's and our crystals contain some water. The index of refraction of zeolites may be changed as the water content changes. Natural pollucite decreases in index about 0.01 to 0.015 when heated; metascolecite increases in index from 1.505 to 1.523 as the number of molecules of water per unit cell decreases from sixteen to about five (Winchell and Winchell, 1951).

Either explanation (or both) seems adequate to account for the reported differences in index of refraction without suggesting a gross chemical change which is neither possible nor plausible. The variation in lattice parameter may be explained in the same manner. Kume and Koizumi also state that their product was not ferromagnetic. The choice of words "slightly magnetic" in Table I (Kopp *et al.*, 1963) may have been misleading. The kind of magnetism was not stated because the temperature dependence of the susceptibility was not measured. Kume and Koizumi suggest that our samples contain Fe_3O_4, but this is unlikely since they are low in iron compared with a pure iron pollucite.

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ANNOUNCEMENT

June 1, 1966

To the Fellows and Members of the Mineralogical Society of America:

At the meeting of the Council of the Mineralogical Society of America at Kansas City on November 3 last, Dr. George Switzer announced his intention to resign as Secretary effective November 1966, and Professor E. Wm. Heinrich announced that he wished to give up the position of Editor of *The American Mineralogist* effective at the same time. The Council accepted these resignations with regret and with expressions of appreciation for the sterling services performed by these men over a number of years. In order to have time to consider possible replacements, the Council met again in Washington in early December. As a result of that meeting, Professor Ralph J. Holmes of Columbia University has agreed to accept the nomination for Secretary, and his name will appear on this year's ballot for that office. Dr. William T. Holser of the Chevron Research Corporation (La Habra, California) has accepted the appointment as Editor of *The American Mineralogist,* effective December 1966.

The Council has also instituted a new committee, to be known as the Program Policy Committee. The purpose of this committee is to examine the programs of the Society, to entertain and appraise proposals for new programs, and to consider activities, such as symposia, special lectures, special meetings, and institutes, by which the Society may most effectively contribute to the advancement of the science of mineralogy. This committee consists of the immediate Past President (as chairman), the Vice President, and three members each serving staggered terms of three years. The Program Policy Committee as now constituted is G. T. Faust (Chairman), F. Chayes, T. Zoltai (1966–68), D. B. Stewart (1966–67), and O. F. Tuttle (1966). Fellows and members of the society are urged to communicate with the chairman or any member of the committee regarding any matter under its preview.

The following amendment, to replace Section I of Article III of the Constitution, will appear on the ballot this year for a vote by the membership:

> "The officers of the Society shall be a president, a vice-president, a secretary, and a treasurer. These four officers, the retiring president, and six fellows at large shall constitute the council. The president and the vice-president shall each be elected annually for a term of one year; no person shall serve more than one term in each office. The secretary and the treasurer shall be elected biennially, in alternate years, for a term of two years, except that