SCORODITE FROM GOLD HILL, TOOLE CO., UTAH

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The determination of the optical properties of scorodite by E. S. Larsen[2] has suggested that there are at least two minerals included under the name scorodite. One, with medium high indices of refraction, is the more common; the other although similar in general appearance and crystal form, has indices of refraction considerably higher (Kuira, Bungo, Japan). Unfortunately there is not sufficient material on the specimens of the latter type for a satisfactory chemical analysis but of the more normal scorodite there is abundant material available from the arsenic deposits of Gold Hill, Toole County, Utah.

The scorodite from this locality forms bodies of considerable magnitude as an alteration product of arsenopyrite and was present in sufficient quantity to form a valuable ore for the manufacture of calcium arsenate. The scorodite is, for the most part, fine granular to compact and usually more or less siliceous, but an occasional nest of small crystals was met with. These crystals are satisfactory material for an examination of this type of scorodite.

Chemical analysis of these crystals shows the mineral to be normal scorodite, essentially free of isomorphous admixture of other mineral molecules. The sample analyzed consists of grayish green crystals, averaging 1 mm. in size. These crystals, while glassy, were clouded by numerous fine cracks and occluded occasional small specks of extraneous material. The analytical results are given below.

The crystals, averaging about 1 mm. in size, while sharply formed, were not satisfactory for crystal measurement. The faces in all cases were too curved for good reflections. The following values obtained on one of the best crystals, show its essential similarity to normal scorodite.

FORM	ϕ	ρ	CHARACTER
a (100)	90°00′	90°00′	medium size, poor reflection
n (110)	54 34	90 00	small to medium, poor
p (111)	48 45	56 24	large, poor

The crystals are orthorhombic and nearly octahedral in habit.

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[2] Microscopic Determination of the Nonopaque Minerals. *U. S. Geological Survey, Bull.* **679**, pp. 132–133, 1921.

ANALYSIS OF SCORODITE, GOLD HILL, UTAH. (U. S. N. M. 94821)
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	1.	2.	3.
Insoluble	0.42		
Ferric oxide (Fe_2O_3)	34.13	34.3	34 6
Alumina (Al_2O_3)	none		
Ferrous oxide (FeO)	0.84		
Lime (CaO)	0.38		
Magnesia (MgO)	0.01		
Arsenic pentoxide (As_2O_5)	48.42	49.4	49.8
Phosphoric pentoxide (P_2O_5)	none		
Water (+)	15.73	16.0	15.6
Water (−)	0.23		
Specific Gravity 3.413.	100.16		

1. Analysis of sample
2. Analysis after deducting extraneous material
3. Theoretical analysis for $Fe_2O_3 \cdot As_2O_5 \cdot 4H_2O$.

The color of the scorodite is pea-green[3] in crystals, but is somewhat lighter in the more massive specimens. The mineral is optically negative, $2V = 54° \pm 5°$. $\rho > \upsilon$ (easily perceived in the interference figure but not sufficiently strong to measure on the Fedorow stage.) The indices of refraction for yellow light as determined by the Merwin dispersion method, are as follows: $\alpha = 1.784 \pm .001$, $\beta = 1.796 \pm .002$, $\gamma = 1.814 \pm .001$. Dispersion F-C $= .03 \pm .005$.

In all respects the mineral from Gold Hill is a normal scorodite and the data given here characterize this type of material satisfactorily. The abnormal scorodites will be investigated if sufficient material can be obtained for satisfactory analyses.

[3] Ridgeway, Robert. Color Standards and Color Nomenclature, *Washington*, 1912, Pl. XLVII.