Metavauxite $Fe^{2+}Al_2(PO_4)_2(OH)_2 \cdot 8H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic to acicular crystals, elongated along [001], showing {100}, {110}, {$\bar{1}$01}, {$\bar{1}$11}, {$\bar{2}$11}, to 2 cm; commonly in radiating aggregates.

Physical Properties: *Tenacity:* Brittle. Hardness = 3 D(meas.) = 2.345 D(calc.) = [2.36]

Optical Properties: Transparent to translucent. *Color:* Colorless, white, pale green; colorless in thin section. *Luster:* Vitreous to silky in aggregates.
Optical Class: Biaxial (+). *Orientation:* $X = b$; $Z \wedge c \simeq -17°$. $\alpha = 1.550(1)$ $\beta = 1.561(1)$ $\gamma = 1.577(1)$ 2V(meas.) = Large.

Cell Data: *Space Group:* $P2_1/c$. $a = 10.22$ $b = 9.56$ $c = 6.94$ $\beta = 97.9°$ Z = 2

X-ray Powder Pattern: Llallagua, Bolivia.
4.687 (100), 4.337 (79), 2.764 (75), 10.12 (69), 3.985 (54), 5.095 (50), 2.749 (32)

Chemistry:

	(1)	(2)
P_2O_5	29.55	29.70
SiO_2	0.05	
Al_2O_3	21.01	21.34
Fe_2O_3	0.35	
FeO	14.57	15.03
MgO	0.55	
CaO	0.27	
H_2O^+	14.00	
H_2O^-	19.22	
H_2O		33.93
Total	99.57	100.00

(1) Llallagua, Bolivia. (2) $FeAl_2(PO_4)_2(OH)_2 \cdot 8H_2O$.

Polymorphism & Series: Dimorphous with paravauxite.

Occurrence: An uncommon secondary mineral in the oxidized zone of tin mines.

Association: Vauxite, paravauxite, wavellite, quartz.

Distribution: From Llallagua and Tazna, Potosí, Bolivia.

Name: In allusion to the chemical relation to *vauxite*.

Type Material: The Natural History Museum, London, England, 1928,335; National Museum of Natural History, Washington, D.C., USA, 136009.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 971–972. (2) Baur, W.H. and B. Rama Rao (1967) The crystal structure of metavauxite. Naturwiss., 51, 561. (3) Blanchard, F.N. and S.A. Abernathy (1980) X-ray powder diffraction data for phosphate minerals: vauxite, metavauxite, vivianite, Mn-heterosite, scorzalite, and lazulite. Florida Scientist, 43, 257–265.