Alumotungstite $(W, Al)(O, OH)_3(?)$

Crystal Data: Cubic; may be rhombohedral, pseudocubic. *Point Group:* $4/m\ \bar{3}\ 2/m$ (probable). As octahedra, to 250 μm, may be flattened with a hexagonal outline, and as rounded groups of octahedra; zoned with a separable outer shell. In microcrystalline patches; intimately intergrown with yttrotungstite or ferritungstite. *Twinning:* Interpenetrant octahedra may represent twins on {111}.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = [4.52]

Optical Properties: Semitransparent. *Color:* White.
Optical Class: Isotropic; commonly weakly anisotropic. $n = 1.935(5)$; birefringence 0.02.

Cell Data: *Space Group:* $Fd3m$ (probable). $a = 10.20$ $Z = 16$

X-ray Powder Pattern: Kramat Pulai mine, Malaysia; some lines are finely split; may be confused with ferritungstite, with which it is commonly intergrown.
5.86 (vvs), 3.07 (vs), 2.93 (vs), 1.80 (s), 1.96 (ms), 1.72 (ms), 1.54 (ms)

Chemistry:

	(1)
WO_3	88.0
SiO_2	0.24
Al_2O_3	8.3
Fe_2O_3	0.06
CaO	0.77
Total	[97.4]

(1) Kramat Pulai mine, Malaysia; by electron microprobe, here calculated to oxides from original analysis W 69.8%, Al 4.4%, Si 0.11%, Fe 0.04%, Ca 0.55%, K trace, Y not detected.

Occurrence: In fine-grained aggregates of yttrotungstite (Kramat Pulai mine, Perak, Malaysia); lining cavities relict after ferberite, which has replaced scheelite, in fine-grained graphitic schists and contained quartz veins (Uganda and Rwanda).

Association: Yttrotungstite (Kramat Pulai mine, Malaysia); ferritungstite, cerotungstite, anthoinite, ferberite (Uganda and Rwanda).

Distribution: At the Kramat Pulai mine, Kinta district, Perak, Malaysia. From the Nyamulilo and Kirwa mines, Kigezi district, Uganda. At Gifurwe, Rwanda.

Name: For its ALUMinum content, by analogy to ferriTUNGSTITE.

Type Material: The Natural History Museum, London, England, 1927,1157.

References: (1) Davis, R.J. and G.W. Smith (1971) Yttrotungstite. Mineral. Mag., 38, 261–285. (2) Davis, R.J., J.G. Francis, and S.J.B. Reed [alumotungstite]. In: M. Fleischer (1977) U.S. Geol. Surv. Open-File Report 81-1169. (3) Sahama, T.G. (1981) The secondary tungsten minerals, a review. Mineral. Record, 12, 81–87.