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

Crystal Data:  Cubic; may be rhombohedral, pseudocubic.  
Point Group:  $4/m 3 2/m$ (probable).  
As octahedra, to 250 $\mu$m, 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:  $Fd\bar{3}m$ (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:  

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO$_3$</td>
<td></td>
<td>88.0</td>
</tr>
<tr>
<td>SiO$_2$</td>
<td></td>
<td>0.24</td>
</tr>
<tr>
<td>Al$_2$O$_3$</td>
<td></td>
<td>8.3</td>
</tr>
<tr>
<td>Fe$_2$O$_3$</td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>CaO</td>
<td></td>
<td>0.77</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>[97.4]</td>
</tr>
</tbody>
</table>

(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.  


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