Rollandite

\[ \text{Cu}_3(\text{AsO}_4)_2\cdot4\text{H}_2\text{O} \]

**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. Crystals to 0.5 mm are elongated along [100], flattened on {010}, and show {010}, {011}, {101}, and {001}. As aggregates, to 1 mm.

**Physical Properties:** *Cleavage:* Good on {001}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 4-4.5 D(meas.) = 3.9(1) D(calc.) = 3.80 Nonfluorescent. Soluble in HCl.


**Cell Data:** *Space Group:* Pnma. \( a = 5.6906(4) \) \( b = 17.061(1) \) \( c = 9.732(1) \) \( Z = 4 \)

**X-ray Powder Pattern:** Roua mines, upper Var valley, Alpes-Maritimes, France. 8.520 (100), 3.221 (90), 3.721 (60), 3.102 (40), 2.817 (35), 2.795 (35), 2.350 (25)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CuO</td>
<td>44.87</td>
<td>44.15</td>
</tr>
<tr>
<td>As₂O₅</td>
<td>42.44</td>
<td>42.53</td>
</tr>
<tr>
<td>H₂O</td>
<td>[12.69]</td>
<td>13.32</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Roua mines, upper Var valley, Alpes-Maritimes, France; average electron microprobe analysis, H₂O by difference; corresponding to \( \text{Cu}_3\text{O}_{0.92}\text{As}_2\text{O}_{5.02}\text{H}_{7.71}\text{O}_{12} \). (2) \( \text{Cu}_3(\text{AsO}_4)_2\cdot4\text{H}_2\text{O} \).

**Occurrence:** A secondary mineral in small geodes.

**Association:** Olivenite, conichalcite, clinothiolite, cornubite, kolfanite, pharmacosiderite, gerhardtite, atacamite, gilmarite, wallkilldelellite-Fe, cuprite, domeykite, algodonite, native copper.

**Distribution:** From the old Cu mines of Roua, upper Var valley (the Daluis gorge), western margin of the Barrot Dome, Alpes-Maritimes, France.

**Name:** Honors Pierre *Rolland* (b. 1940), who collected the material studied.

**Type Material:** Natural History Museum, Geneva, Switzerland (447.008).