Coquandite  \( \text{Sb}^{3+}\text{O}_8(\text{SO}_4)\cdot\text{H}_2\text{O} \)

**Crystal Data:** Triclinic. \( \text{Point Group: } \bar{1} \). Crystals lamellar, elongated along [001], very thin tabular on \{010\}, to 0.1 mm, showing \{010\}, \{001\}, \{2\bar{1}0\}, and \{1\bar{1}0\}. Fibrous, in feathery spheroidal aggregates; in thin crusts, powdery, massive. \text{Twinning: On } \{010\} \text{ as twin plane, polysynthetic.}


**Optical Properties:** Transparent to translucent. Color: Colorless, white. Streak: White. Luster: Adamantine to pearly. Optical Class: Biaxial (+); low birefringence. Orientation: \( Z \simeq c \); OAP \( \parallel [001] \); parallel extinction \( \parallel \{010\} \); length-slow. \( n = 2.08(5) \). 2V(meas.) \( \gg 60^\circ \)

**Cell Data:** Space Group: \( P\bar{1} \). \( a = 11.434–11.449 \quad b = 29.77–29.846 \quad c = 11.314–11.337 \)
\( \alpha = 91.07^\circ–91.16^\circ \quad \beta = 118.88^\circ–119.24^\circ \quad \gamma = 92.49^\circ–92.82^\circ \quad Z = 12 \)

**X-ray Powder Pattern:** Pereta mine, Italy.
3.092 (100), 3.304 (93), 6.81 (67), 14.84 (50), 9.27 (41), 3.200 (39), 8.01 (34)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{Sb}_2\text{O}_3 )</td>
<td>88.25</td>
<td>88.53</td>
<td>89.96</td>
<td>88.91</td>
</tr>
<tr>
<td>( \text{CaO} )</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>( \text{Na}_2\text{O} )</td>
<td>0.02</td>
<td>0.02</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td></td>
<td>1.43</td>
<td>1.43</td>
<td></td>
</tr>
<tr>
<td>( \text{SO}_3 )</td>
<td>8.35</td>
<td>8.33</td>
<td>8.38</td>
<td>8.35</td>
</tr>
<tr>
<td>Total</td>
<td>99.86</td>
<td>98.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Pereta mine, Italy; by electron microprobe, average of 10 analyses on three grains. (2) Cetine mine, Italy; by electron microprobe, average of four analyses on two grains. (3) Lucky Knock mine, Washington, USA; by electron microprobe, average of eight analyses on seven grains, \( \text{H}_2\text{O} \) by elemental analyzer, confirmed by IR. (4) Average of (1–3); corresponding to \( \text{Sb}_{5.98}\text{Ca}_{0.01}\text{Na}_{0.01}\text{O}_{7.96}(\text{SO}_4)_{1.02}\cdot0.78\text{H}_2\text{O} \).

**Occurrence:** Probably produced by action of \( \text{H}_2\text{SO}_4 \) on stibnite, in a stibnite vein in silicified limestone (Pereta mine, Italy).

**Association:** Klebselsbergite, peretaite, valentinite, sénarmontite, stibiconite, stibnite, sulfur, gypsum, quartz.

**Distribution:** From the Cetine mine, 20 km southwest of Siena, and the Pereta mine, Scansano, Tuscany, Italy. In the Lucky Knock mine, Tonasket, Okanogan Co., Washington, USA.

**Name:** For Henri-Jean-Baptiste Coquand (1813–1881), Professor of Geology and Mineralogy, University of Marseilles, Marseilles, France, for his early work on the antimony deposits of Tuscany, Italy.

**Type Material:** University of Florence, Florence, 1761/RI; University of Pisa, Pisa, Italy, 8800; National Museum of Natural History, Washington, D.C., USA.