Dolerophanite  

\[ \text{Cu}_2\text{O(SO}_4) \]

(C)2001-2005 Mineral Data Publishing, version 1

**Crystal Data:** Monoclinic.  
**Point Group:** 2/m.  
As prismatic crystals elongated along [010], flattened on \{101\} and striated || [010], with complex development of over 20 forms, to 1 mm.

**Physical Properties:**  
**Cleavage:** Perfect on \{010\}.  
**Hardness:** = 3  
\[ D(\text{meas.}) = 4.17 \]  
\[ D(\text{calc.}) = 4.16 \]  
Soluble in \( \text{H}_2\text{O} \), leaving a residue.

**Optical Properties:**  
**Translucent to opaque.**  
**Color:** Chestnut-brown to dark brown and nearly black; yellow-brown in transmitted light.  
**Streak:** Yellowish brown.  
**Optical Class:** Biaxial (+).  
**Pleochroism:** \( X = \) deep brown; \( Y = \) brownish yellow; \( Z = \) lemon-yellow.  
**Orientation:** \( Y = b; Z \wedge c = -10^\circ \).  
**Dispersion:** \( r > v \), very strong, crossed.  
\( \alpha = 1.715 \)  
\( \beta = 1.820 \)  
\( \gamma = 1.880 \)  
\( 2V(\text{meas.}) = 85^\circ \)

**Cell Data:**  
**Space Group:** \( C2/m \) (synthetic).  
\[ a = 9.370(1) \]  
\[ b = 6.319(1) \]  
\[ c = 7.639(1) \]  
\[ \beta = 122.34(1)^\circ \]  
\[ Z = 4 \]

**X-ray Powder Pattern:** Vesuvius, Italy.  
\( 3.623 (100), 6.443 (50), 2.615 (42), 2.256 (30), 2.776 (21), 2.546 (18), 2.028 (13) \)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{SO}_3 )</td>
<td>33.94</td>
<td>33.48</td>
</tr>
<tr>
<td>( \text{CuO} )</td>
<td>66.06</td>
<td>66.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>[100.00]</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Vesuvius, Italy; recalculated to 100% from an original total of 98.69%; corresponds to \( \text{Cu}_{1.98}\text{O}_{0.98}(\text{SO}_4)_{1.01} \).  
(2) \( \text{Cu}_2\text{O(\text{SO}_4)} \).

**Occurrence:** A rare volcanic sublimate.

**Association:** Chalcocyanite, euchlorine, eriochalcite (Vesuvius, Italy); chalcocyanite, euchlorine, eriochalcite, vergasovaite, fedotovite, melanothallite, piypite, ponomarevite, cotunnite, sofiite, halite, sylvite, tenorite, cuprian anglesite, gold (Tolbachik volcano, Russia).

**Distribution:** On Vesuvius, Campania, Italy. At the Tolbachik fissure volcano, Kamchatka Peninsula, Russia.

**Name:** From the Greek for *fallacious* and *to appear*, in allusion to a physical appearance nonsuggestive of the composition.

**Type Material:** Natural History Museum, Paris, France, 71.124.

**References:**  