Chlorothionite \[ \text{K}_2\text{Cu(SO}_4\text{)Cl}_2 \]

Crystal Data: Orthorhombic. **Point Group:** 2/m 2/m 2/m. As crystalline incrustations.

Physical Properties: Hardness = 2.5  
\( D(\text{meas.}) = 2.69 \)  
\( D(\text{calc.}) = [2.68] \)  
Soluble in H\(_2\)O.

Optical Properties: Semitransparent. **Color:** Bright to pale blue, may be pale greenish blue.  
**Optical Class:** Biaxial (+) (synthetic).  
**Dispersion:** \( r > v \).  
\( \alpha = \text{n.d.} \)  
\( \beta = \text{n.d.} \)  
\( \gamma = \text{n.d.} \)  
2V(\text{meas.}) = Moderately large.

Cell Data: **Space Group:** Pnma.  
\( a = 7.732(15) \)  
\( b = 6.078(1) \)  
\( c = 16.292(3) \)  
\( Z = 4 \)

X-ray Powder Pattern: Vesuvius, Italy.  
3.04 (100), 2.187 (70), 2.847 (35), 5.69 (30), 3.26 (30), 3.15 (20), 2.491 (20)

Chemistry:  
\[
\begin{array}{c|c|c}
\text{Species} & (1) & (2) \\
\hline
\text{SO}_4 & 27.50 & 25.93 \\
\text{CuO} & 24.48 & 25.77 \\
\text{K}_2\text{O} & 31.67 & 30.51 \\
\text{Cl} & 20.04 & 22.97 \\
\text{LOI} & 1.12 & \\
\text{O} = \text{Cl}_2 & 4.52 & 5.18 \\
\text{Total} & 100.29 & 100.00 \\
\end{array}
\]

(1) Vesuvius, Italy; here converted to oxides from an original elemental analysis totalling 100.00%.  
(2) \( \text{K}_2\text{Cu(SO}_4\text{)Cl}_2 \).

Occurrence: As sublimates around volcanic fumaroles.

Association: n.d.

Distribution: From Vesuvius, Campania, Italy.

Name: From the Greek for chlorine and sulfur in the composition.

Type Material: Mineralogical Museum, University of Bari, Bari, Italy.

References:  