Santarosaite

\[ \text{CuB}_2\text{O}_4 \]

**Crystal Data:** Tetragonal.  
*Point Group:* \( \bar{4} 2m \).  
As globules of leaf-like crystals, to 0.06 mm.

**Physical Properties:**  
*Cleavage:* n.d.  
*Fracture:* n.d.  
*Tenacity:* n.d.  
*Hardness:* n.d.  
*Density (meas.)* = n.d.  
*Density (calc.)* = 3.96

**Optical Properties:**  
*Translucent.*  
*Color:* Vivid blue.  
*Streak:* Pale blue.  
*Luster:* Vitreous.  
*Optical Class:* n.d.  
\( n = 1.75 \) (calculated from reflectance data).

**Cell Data:**  
*Space Group:* \( \bar{1}4 2d \).  
*Cell Parameters:* \( a = 11.517(8) \text{ Å}, \quad c = 5.632(6) \text{ Å} \).  
*Volume:* \( V = 73.91(8) \text{ Å}^3 \).  
*Z:* 12

**X-ray Powder Pattern:**  
Santa Rosa mine, Northern Chile.  
3.797 (100), 3.638 (47), 2.775 (35), 2.572 (26), 2.501 (26), 1.822 (21), 1.793 (20)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CuO</td>
<td>43.24</td>
<td>53.33</td>
</tr>
<tr>
<td>PbO</td>
<td>4.48</td>
<td></td>
</tr>
<tr>
<td>CaO</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>( \text{B}_2\text{O}_3 )</td>
<td>45.44</td>
<td>46.67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>94.13</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Santa Rosa mine, Northern Chile; average of 17 electron microprobe and EELS analyses, \( \text{BO}_4 \) and absence of other anionic groups confirmed by IR and Raman spectroscopy, corresponding to \( (\text{Cu}_{0.86}\text{Pb}_{0.03}\text{Ca}_{0.03})\text{B}_{2.06}\text{O}_4 \).  
(2) \( \text{CuB}_2\text{O}_4 \).

**Occurrence:** In the oxidation zone of a hydrothermal polymetallic vein deposit.

**Association:** Atacamite, malachite, wulfenite, anhydrite.

**Distribution:** Santa Rosa mine, 15 km SE of Iquique, Atacama desert, Northern Chile.

**Name:** Named for the mine that produced the first specimens.

**Type Material:** Mineralogical Museum, University of Hamburg, Germany.

**References:**  