Emilite

\( \text{Cu}_{2.68}\text{Pb}_{2.68}\text{Bi}_{5.32}\text{S}_{12} \)

**Crystal Data:** Orthorhombic.  
*Point Group:* \( \text{mm}2 \). As elongate crystals to 0.3 mm.

**Physical Properties:**  
*Cleavage:* Imperfect on \( \{0kl\} \).  
*Fracture:* Uneven.  
*Tenacity:* Brittle.  
*Hardness* = 3.5-4  
*VHN* = 242-287 (50-100 g load).  
*D(meas.)* = n.d.  
*D(calc.)* = 7.025

**Optical Properties:**  
*Opaque.*  
*Color:* Tin-white, white with a creamy tint in reflected light.  
*Streak:* Grayish black.  
*Luster:* Metallic.  
*Optical Class:* n.d.  
*Anisotropism:* Moderate, greenish to grayish.  
*R_1-R_2:* (470) 39.4-46.95, (546) 39.21-48.25, (589) 38.98-48.35, (650) 38.30-46.94

**Cell Data:**  
*Space Group:* \( \text{Pmc2}_1 \).  
*a = 4.0285(8)\) \( \text{b} = 44.986(9)\) \( c = 11.599(2) \) \( Z = 1 \)

**X-ray Powder Pattern:** Felbertal deposit, 10 km south of Mittersill, Salzburg Province, Austria.  
3.656 (100), 2.852 (95), 3.567 (81), 3.152 (78), 3.174 (71), 4.04 (49), 3.605 (49)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu</td>
<td>7.68</td>
<td>7.56</td>
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<tr>
<td>Pb</td>
<td>25.4</td>
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<tr>
<td>Bi</td>
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<td>50.09</td>
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<td>S</td>
<td>17.59</td>
<td>17.32</td>
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<tr>
<td>Total</td>
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<td>100.00</td>
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</table>

(1) Felbertal deposit, Salzburg Province, Austria; average of 5 electron microprobe analyses; corresponding to \( \text{Cu}_{2.68}\text{Pb}_{2.68}\text{Bi}_{5.32}\text{S}_{12} \).  
(2) \( \text{Cu}_{2.68}\text{Pb}_{2.68}\text{Bi}_{5.32}\text{S}_{12} \).

**Occurrence:** In quartz veins cutting a metamorphosed scheelite deposit.

**Association:** Bismuthinite derivatives in the range krupkaite–hammarite, Ag-bearing lillianite, makovickyite, pavonite, cosalite, galenobismutite, cannizzarite, tetradyntite, native bismuth, chalcopyrite, pyrite, quartz.

**Distribution:** From the Felbertal deposit, 10 km south of Mittersill, Salzburg Province, Austria.

**Name:** Honors Professor Dr. Emil Makovicky (b. 1940) for his contributions to the crystal chemistry and modular description of diverse sulfosalts families, including those from the Felbertal deposit.

**Type Material:** The Mineral Reference Collection, Division of Mineralogy, University of Salzburg, Austria (# 14954) and at the Geological Institute and Museum, University of Copenhagen, Denmark.

**References:**