Eckerite  \( \text{Ag}_2\text{CuAsS}_3 \)

**Crystal Data**: Monoclinic.  *Point Group*: 2/m.  As grains to 300 \( \mu \)m.

**Physical Properties**
- *Cleavage*: None.
- *Fracture*: Irregular.
- *Tenacity*: Brittle.
- Hardness = 2.5-3  VHN = 70 (25 g load).
- \( D(\text{meas.}) = \text{n.d.} \)  \( D(\text{calc.}) = 5.313 \)

**Optical Properties**
- *Luster*: Adamantine to metallic.
- * Optical Class*: n.d.
- *Pleochroism*: Weak, light gray to slightly bluish gray.
- *Anisotropism*: Weak, grayish to light blue.

**Cell Data**
- *Space Group*: \( \text{C2}/c \).
- \( a = 11.8643(3) \)  \( b = 6.2338(1) \)  \( c = 16.6785(4) \)  \( \beta = 110.842(3)^\circ \)  \( Z = 8 \)

**X-ray Powder Pattern**: Lengenbach quarry, Binn Valley, Valais, Switzerland. 2.941 (100), 2.776 (80), 3.336 (70), 2.134 (50), 2.677 (40), 2.084 (40), 2.076 (40)

**Chemistry**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag</td>
<td>52.08</td>
<td>47.90</td>
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<tr>
<td>Cu</td>
<td>11.18</td>
<td>14.11</td>
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<tr>
<td>Pb</td>
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<tr>
<td>Sb</td>
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<tr>
<td>As</td>
<td>15.28</td>
<td>16.63</td>
</tr>
<tr>
<td>S</td>
<td>20.73</td>
<td>21.36</td>
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<tr>
<td>Total</td>
<td>99.60</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Lengenbach quarry, Binn Valley, Valais, Switzerland; average of 5 electron microprobe analyses; corresponding to \( \text{Ag}_{2.24}\text{Cu}_{0.82}\text{As}_{0.94}\text{Sb}_{0.01}\text{S}_{2.99} \).  (2) \( \text{Ag}_2\text{CuAsS}_3 \).

**Occurrence**: In massive to interstitial sulfosalt accumulations in dolostones metamorphosed to upper greenschist to lower amphibolite facies.

**Association**: Realgar, sinnerite, hatchite, trechmannite, smithite, dolomite.

**Distribution**: From the Lengenbach quarry, Binn Valley, Valais, Switzerland.

**Name**: Honors Markus Ecker (b. 1966), an expert on the minerals of Lengenbach quarry.

**Type Material**: Natural History Museum, University of Florence, Italy (3144/I) and the Natural History Museum, University of Basel, Switzerland (S169).