**Kyawthuite**

**Crystal Data:** Monoclinic.  
**Point Group:** 2/m.  

As a waterworn, roughly rectangular prism to ~6 mm.

**Physical Properties:** **Cleavage:** Perfect on {001}; good on {110} and {110}.  
**Tenacity:** Brittle.  
**Fracture:** Conchoidal.  
**Hardness:** 5  
**D (meas.)** = 8.256(5)  
**D (calc.)** = 8.127

**Optical Properties:**  
**Color:** Orange with red overtone.  
**Streak:** White.  
**Luster:** Adamantine.  
**Optical Class:** Biaxial (sign ambiguous).  
\[ \alpha(\text{calc.}) = 2.194 \quad \beta(\text{calc.}) = 2.268 \quad \gamma(\text{calc.}) = 2.350 \]

2V (meas.) = 90(2)°  
**Orientation:**  
\[ X = b, \quad Y \approx c, \quad Z \approx a. \]

**Pleochroism:** Imperceptible.

**Cell Data:**  
**Space Group:** I2/c.  
\[ a = 5.4624(4) \quad b = 4.8852(2) \quad c = 11.8520(8) \]
\[ \beta = 101.195(7)° \]

**Z:** 4

**X-ray Powder Pattern:** Mogok, Pyin-Oo-Lwin district, Mandalay division, Burma (Myanmar).

3.266 (100), 2.900 (66), 1.803 (43), 1.5288 (28), 2.678 (24), 1.6264 (23), 2.437 (22)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi₂O₃</td>
<td></td>
<td>50.64</td>
<td>59.02</td>
</tr>
<tr>
<td>Sb₂O₃</td>
<td>[6.90]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sb₂O₅</td>
<td>[42.44]</td>
<td>40.98</td>
<td></td>
</tr>
<tr>
<td>Ta₂O₅</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.50</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

(1) Mogok, Pyin-Oo-Lwin district, Mandalay division, Burma (Myanmar); average of 9 electron microprobe analyses supplemented by Raman and FTIR spectroscopy which show a trace amount of OH/H₂O; Sb₂O₃/Sb₂O₅ apportioned based on the structure; LA-ICP mass spectroscopy indicated TiO₂ 0.09, Nb₂O₅ 0.05, WO₃ 0.09 and UO₂ 0.03 wt. %; corresponds to (Bi³⁺₀.₈₂Sb³⁺₀.₁₈)Σ=1.₀₀  
(Sb⁵⁺₀.₉₉Ta⁵⁺₀.₀₁)Σ=1.₀₀O₄.  
(2) Bi³⁺Sb⁵⁺O₄.

**Occurrence:** Only known from alluvium, the presence of Bi, Sb and small amounts of Ta, as well as trace amounts of Ti, Nb, W and U, suggest an origin in a pegmatite.

**Association:** Unknown.

**Distribution:** Found as a waterworn crystal in alluvium at Chaung-gyi-ah-le-ywa (Middle Village at Chaung-gyi), Chaung-gyi (Big Stream) valley, ~5 km north-northeast of Mogok, Pyin-Oo-Lwin district, Mandalay division, Burma (Myanmar).

**Name:** Honors Dr. Kyaw Thu (b. 1973), a Burmese mineralogist-petrologist-gemologist on the staff of the Geology Department of Yangon University from 1998 to 2005, and has been the owner/operator of the Macle Gem Trade Laboratory since 2003. Dr. Thu found the specimen.

**Type Material:** Mineral Sciences Department, Natural History Museum of Los Angeles County, Los Angeles, California, USA (a 1.61-carat faceted gem, 65602).

**References:**

(2) (2017) Amer. Mineral., 102, 2344 (abs. ref. 1).