**Maleevite**

**BaB$_2$Si$_2$O$_8$**

**Crystal Data:** Orthorhombic.  \( \text{Point Group: } 2/m \ 2/m \ 2/m \). As equant grains to 2 mm, rarely tabular.

**Physical Properties:**  
* Cleavage: None.  
* Fracture: Uneven.  
* Tenacity: Brittle.  
* Hardness = 7 VHN = 1018 (50 g load).  
* \( D(\text{meas.}) = 3.78(1) \)  
* \( D(\text{calc.}) = 3.79 \)

**Optical Properties:**  
* Transparent to translucent.  
* Color: White to colorless.  
* Streak: White.  
* Luster: Vitreous, slightly greasy.  
* Bright blue fluorescence in short-wave UV.  
* \( \alpha = 1.649(2) \ \beta = 1.656(2) \ \gamma = 1.656(2) \)  
* \( 2V(\text{meas.}) = 5(3)^\circ \)  
* \( 2V(\text{calc}) = 0^\circ \)  
* Dispersion: None.  
* Pleochroism: None.

**Cell Data:**  
* Space Group: Pnma.  
* \( a = 8.141(2) \)  
* \( b = 8.176(2) \)  
* \( c = 9.038(2) \)  
* \( Z = 4 \)

**X-ray Powder Pattern:**  
Dara-i-Pioz glacier, Alai mountain range, Tien Shan, northern Tajikistan.  
3.62 (100), 2.021 (70), 6.07 (60), 3.39 (60), 2.83 (50), 2.481 (40), 4.86 (30)

**Chemistry:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Formula</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BaO</td>
<td></td>
<td>43.64</td>
</tr>
<tr>
<td>PbO</td>
<td></td>
<td>0.42</td>
</tr>
<tr>
<td>B$_2$O$_3$</td>
<td></td>
<td>19.92</td>
</tr>
<tr>
<td>SiO$_2$</td>
<td></td>
<td>34.86</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>98.84</td>
</tr>
</tbody>
</table>

(1) Dara-i-Pioz glacier, Alai mountain range, northern Tajikistan; electron microprobe analysis, corresponding to \((\text{Ba}_{0.99}\text{Pb}_{0.01})_{2-1.00}\text{B}_{1.99}\text{Si}_{2.01}\text{O}_8\).

**Occurrence:** In a slightly rounded block of pegmatite in syenite within a boulder in the moraine of the Dara-i-Pioz glacier, Alai mountain range, Tien Shan, northern Tajikistan. The Dara-i-Pioz massif at the head of the glacier contains B-rich alkaline rocks and pegmatites.

**Association:** Quartz, microcline, aegirine, with subordinate arfvedsonite, polythionite, reedmergerite, cesium-kupletskite, hyalotekite, albite.

**Distribution:** Dara-i-Pioz glacier, Alai mountain range, Tien Shan, northern Tajikistan.

**Name:** Honors Bulgarian mineralogist Mikhael Naidenovich Maleev (b. 1940).

**Type Material:** A.E. Fersman Mineralogical Museum, Moscow, Russia.

**References:**  
Maleevite, BaB$_2$Si$_2$O$_8$ and pekovite, SrB$_2$Si$_2$O$_8$, new mineral species from the Dara-i-Pioz alkaline massif, northern Tajikistan: description and crystal structure. Can. Mineral., 42, 107–119.  
(2) (2005) 
Amer. Mineral., 90, 272-273 (abs. ref. 1).