**Baumoite**

\[
\text{Ba}_0.5[(\text{UO}_2)_3\text{O}_8\text{Mo}_2(\text{OH})_3](\text{H}_2\text{O})_3
\]

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As tapering tabular to prismatic crystals to 0.11 mm. *Twinning:* Structure is twinned and incommensurately modulated (q = 0.718(4)a* + 0.280(2)c*).


*Optical Class:* Biaxial (-). \(\alpha = 1.716(4)\) \(\beta = 1.761(4)\) \(\gamma = 1.767(4)\) \(2V(\text{calc.}) = 42.2^\circ\)

**Cell Data:** *Superspace Group:* X2/m(007)0s with \(X = (0,\frac{1}{2},0,\frac{1}{2})\).

\[
\begin{align*}
a & = 9.8337(3) \\
b & = 15.0436(5) \\
c & = 14.2055(6) \\
\beta & = 108.978(3)^\circ \\
Z & = 4
\end{align*}
\]

**X-Ray Diffraction Pattern:** Near the Radium Hill mine, South Australia. 7.450 (100), 9.175 (39), 3.067 (33), 3.365 (31), 3.255 (31), 3.209 (28), 3.554 (20)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>BaO</td>
<td>9.88</td>
<td></td>
</tr>
<tr>
<td>CaO</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Al_2O_3</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>UO_3</td>
<td>62.80</td>
<td></td>
</tr>
<tr>
<td>MoO_3</td>
<td>21.56</td>
<td></td>
</tr>
<tr>
<td>P_2O_5</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>H_2O</td>
<td>[7.99]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>102.64</td>
<td></td>
</tr>
</tbody>
</table>

(1) Near the Radium Hill mine, South Australia; average electron microprobe analysis supplemented by IR spectroscopy. H_2O calculated for charge balance; corresponds to Ba_0.87Ca_0.03Al_0.04U_2.97Mo_2.02P_0.03O_22H_11.99.

**Mineral Group:** As crusts on granite as a weathering product of baryte and primary U and Mo minerals by oxidizing groundwater.

**Association:** Baryte, metatorbernite, phurcalite, kaolinite.

**Distribution:** From 4 km northwest of the Radium Hill mine, South Australia.

**Name:** For its essential chemical elements: barium, uranium, and molybdenum.

**Type Material:** South Australian Museum, Adelaide, South Australia (G34697).