

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

Physical Properties: *Cleavage:* One excellent set. *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = ~2.5 D(meas.) = n.d. D(calc.) = 4.61 Bright yellow-green fluorescence under SW UV.

Optical Properties: Translucent. *Color:* Yellow to orange-yellow. *Streak:* Pale yellow. *Luster:* Vitreous. *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:* $X2/m(a0\gamma)0s$ with $X = (0, \frac{1}{2}, 0, \frac{1}{2})$.
 $a = 9.8337(3)$ $b = 15.0436(5)$ $c = 14.2055(6)$ $\beta = 108.978(3)^\circ$ $Z = 4$

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:	(1)
BaO	9.88
CaO	0.12
Al ₂ O ₃	0.14
UO ₃	62.80
MoO ₃	21.56
P ₂ O ₅	0.15
H ₂ O	[7.99]
Total	102.64

(1) Near the Radium Hill mine, South Australia; average electron microprobe analysis supplemented by IR spectroscopy, H₂O calculated for charge balance; corresponds to $\text{Ba}_{0.87}\text{Ca}_{0.03}\text{Al}_{0.04}\text{U}_{2.97}\text{Mo}_{2.02}\text{P}_{0.03}\text{O}_{22}\text{H}_{11.99}$.

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).

References: (1) Elliott, P., J. Plášil, V. Petříček, J. Čejka, and L. Bindi (2019) Twinning and incommensurate modulation in baumoite, $\text{Ba}_{0.5}[(\text{UO}_2)_3\text{O}_8\text{Mo}_2(\text{OH})_3](\text{H}_2\text{O})_{-3}$, the first natural Ba uranyl molybdate. *Mineral. Mag.*, 83, 507-514.