Beshtauite $(NH_4)_2(UO_2)(SO_4)_2 \cdot 2H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Crystals are blocky prismatic, to 0.2 mm.

Physical Properties: *Cleavage*: None. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = ~ 2 D(meas.) = n.d. D(calc.) = 3.046 Fluoresces green under SW and LW UV. Radioactive. Slowly soluble in water.

Optical Properties: Transparent. *Color*: Light green, colorless in thin section. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.566(3) β = 1.566(3) γ = 1.592(3) 2V(meas.) = < 10° 2V(calc.) = 0°

Cell Data: *Space Group*: $P2_1/c$. a = 7.7360(8) b = 7.3712(5) c = 20.856(2) β = 102.123(8)° Z = 4

X-ray Powder Pattern: Beshtau uranium deposit, Mount Beshtau, Northern Caucasus, Russia. 6.86 (100), 3.410 (38), 5.307 (36), 5.005 (35), 3.081 (24), 2.881 (20), 5.997 (19)

Chemistry:	(1)	(2)
$(NH_4)_2O$	[10.33]	9.75
UO_3	53.21	53.53
SO_3	29.40	29.97
H_2O	[7.06]	6.75
Total	100.00	100.00

(1) Beshtau uranium deposit, Mount Beshtau, Northern Caucasus, Russia; average of 7 electron microprobe analyses supplemented by FTIR spectroscopy, H_2O calculated by difference, $(NH_4)_2O$ calculated from measured N (5.56 wt. %); corresponds to $(NH_4)_{2.12}U_{0.99}S_{1.96}O_{9.91}(H_2O)_{2.09}$.
(2) $(NH_4)_2(UO_2)(SO_4)_2 \cdot 2H_2O$.

Occurrence: A secondary mineral in the oxidation zone of a hydrothermal vein-type uranium deposit in porphyritic granite.

Association: Rozenite, gypsum, lermontovite, marcasite, pyrite, halloysite, opal.

Distribution: From the Beshtau uranium deposit, Mount Beshtau, Stavropol region, Northern Caucasus, Russia.

Name: For the mine that produced the first specimens.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (93775).

References: (1) Pekov, I.V., S.V. Krivovichev, V.O. Yapaskurt, N.V. Chukanov, and D.I. Belakovskiy (2014) Beshtauite, $(NH_4)_2(UO_2)(SO_4)_2 \cdot 2H_2O$, a new mineral from Mount Beshtau, Northern Caucasus, Russia. Amer. Mineral., 99, 1183-1787.