Bluelizardite $Na_7(UO_2)(SO_4)_4Cl(H_2O)_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As bladed crystals, to 0.4 mm, elongated on [010] and flattened by {001}. Other prominent form are {100}, {001}, and {111}. Crystals form spherical radial divergent (hedgehog-like) aggregates.

Physical Properties: *Cleavage*: Good on {001}. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = 2 D(meas.) = n.d. D(calc.) = 3.116 Bright yellow-green fluorescence under LW and SW UV.

Optical Properties: Transparent. *Color*: Pale yellow. *Streak*: Yellowish white. *Luster*: Vitreous. *Optical Class*: Biaxial (–). $\alpha = 1.515$ $\beta = 1.540$ $\gamma = 1.545$ 2V(meas.) = 48(2)° 2V(calc.) = 47.6° *Pleochroism*: None. *Orientation*: $X = b$, $Y \approx a$, $Z \approx c$.

Cell Data: *Space Group*: *C*2/*c*. $a = 21.1507(6)$ $b = 5.3469(12)$ $c = 34.6711(9)$ $\beta = 104.913(3)°$ Z = 8

X-ray Powder Pattern: Blue Lizard U mine, San Juan County, Utah, USA.
5.16 (100), 10.31 (60), 17.08 (52), 3.186 (36), 3.353 (28), 3.484 (27), 4.238 (23)

Chemistry:

	(1)	(2)
Na_2O	24.15	24.46
SO_3	35.84	36.07
UO_3	32.89	32.31
Cl	3.76	4.00
H_2O	[4.05]	4.06
–OH=Cl	0.85	0.90
Total	99.94	100.00

(1) Blue Lizard U mine, Utah, USA; average of 5 electron microprobe analyses, H_2O by structural analysis, presence of SO_4, H_2O, UO_2 confirmed by Raman spectroscopy; corresponding to $Na_{6.94}(U_{1.02}O_2)(SO_4)_{4.00}Cl_{0.94}O_{0.06}(H_2O)_2$. (2) $Na_7(UO_2)(SO_4)_4Cl(H_2O)_2$.

Occurrence: An oxidation product as efflorescence on tunnel walls in sulfide-bearing sandstone in an abandoned underground Colorado Plateau-type uranium mine.

Association: Chalcanthite, copiapite, ferrinatrite, gypsum, kröhnkite, johannite, and a few new unnamed uranyl sulfates of Na and Mg.

Distribution: From the Blue Lizard U mine, Red Canyon, White Canyon district, San Juan County, Utah, USA.

Name: For the mine that produced the first specimens.

Type Material: Natural History Museum of Los Angeles County, California, USA (# 64060, 64061, 64062, 64063).

References: (1) Plášil, J., A.R. Kampf, A.V. Kasatkin, and J. Marty (2014) Bluelizardite, $Na_7(UO_2)(SO_4)_4Cl(H_2O)_2$, a new uranyl sulfate mineral from the Blue Lizard mine, San Juan County, Utah, USA. Journal of Geosciences, 59, 145-158. (2) (2014) Amer. Mineral., 99, 1806-1807 (abs. ref. 1).