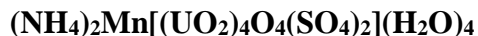


Redcanyonite

Crystal Data: Monoclinic. *Point Group:* 2/m. In radial aggregates, to 1 mm, composed of needles and blades, to 0.2 mm, flattened on {010}, elongated on [100], and that exhibit {001}, {010}, {101}, and $\{10\bar{1}\}$. *Twinning:* By 180° rotation on [100].

Physical Properties: *Cleavage:* Perfect on {010}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = ~2 D(meas.) = n.d. D(calc.) = 4.633-4.688 Soluble in dilute HCl.

Optical Properties: Translucent. *Color:* Red-orange. *Streak:* Pale orange. *Luster:* Vitreous. *Optical Class:* Biaxial (+). $\alpha = 1.725(3)$ $\beta = 1.755(3)$ $\gamma = 1.850(5)$ $2V(\text{meas.}) = 60(2)^\circ$ $2V(\text{calc.}) = 61.3^\circ$ *Orientation:* $X = b$, $Y \approx c^*$, $Z \approx a$. *Dispersion:* Very strong, $r < v$. *Pleochroism:* $X = \text{orange}$, $Y = \text{yellow}$, $Z = \text{orange}$. *Absorption:* $Y \ll X < Z$.

Cell Data: Space Group: $C2/m$. $a = 8.6572(17)$ $b = 14.155(3)$ $c = 8.8430(19)$ $\beta = 104.117(18)^\circ$ $Z = 2$

X-ray Powder Pattern: Blue Lizard mine, Red Canyon, San Juan County, Utah, USA. 7.19 (100), 3.112 (72), 3.453 (56), 3.600 (33), 2.657 (23), 8.55 (21), 2.491 (21)

Chemistry:	(1)	(2)
(NH ₄) ₂ O	3.41	3.48
P ₂ O ₅	0.10	
SO ₃	10.28	10.68
MnO	2.26	4.73
CuO	0.46	
ZnO	0.34	
UO ₃	74.27	76.30
<u>H₂O</u>	<u>[5.10]</u>	<u>4.81</u>
Total	96.22	100.00

- (1) Blue Lizard mine, Red Canyon, San Juan County, Utah, USA; average of 5 electron microprobe analyses supplemented by Raman and FTIR spectroscopy, H₂O calculated from structure; corresponds to (NH₄)_{2.02}(Mn_{0.49}Cu_{0.09}Zn_{0.06}) $\Sigma=0.64$ H⁺_{0.72}[(UO₂)₄O₄(S_{0.99}P_{0.01}O₄)₂](H₂O)₄.
 (2) (NH₄)₂Mn[(UO₂)₄O₄(SO₄)₂](H₂O)₄.

Mineral Group: Zippeite group.

Occurrence: A secondary uranium mineral localized within organic-rich beds that are laced with uraninite and sulfides. NH⁴⁺ inferred to be from decomposition of organic material.

Association: Ammoniozippeite, bobcookite, brochantite, devilline, gypsum, johannite, posnjakite, natrozippeite, pentahydrate, pickeringite.

Distribution: From the Blue Lizard mine, on the northern edge of Red Canyon, White Canyon district, San Juan County, Utah, USA.

Name: For the locality, Red Canyon in southeast Utah and in allusion to the red and orange hues of iron-stained sandstones within the canyon, which are also the striking color of the new mineral.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (66293, 66294, 66295, 66296, 66297, and 66298).

- References:** (1) Olds, T.A., J. Plášil, A.R. Kampf, P.C. Burns, B.P. Nash, J. Marty, T.P. Rose, and S.M. Carlson (2018) Redcanyonite, (NH₄)₂Mn[(UO₂)₄O₄(SO₄)₂](H₂O)₄, a new zippeite-group mineral from the Blue Lizard mine, San Juan County, Utah, USA. *Mineral. Mag.*, 82(6), 1261-1275.
 (2) (2019) *Amer. Mineral.*, 104(12), 1869-1870 (abs. ref. 1).