

Crystal Data: Monoclinic. *Point Group:* 2/m. As aggregates of anhedral grains to 60 μm.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 2.5
D(meas.) = 2.29(2) D(calc.) = 2.347

Optical Properties: Transparent. *Color:* Colorless, reddish pink in aggregates. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.498(2)$ $\beta = 1.503(2)$ $\gamma = 1.505(2)$ $2V(\text{meas.}) = 70(10)^\circ$
 $2V(\text{calc.}) = 64^\circ$ *Dispersion:* Weak, $r > v$.

Cell Data: *Space Group:* P2₁/a. $a = 11.147(1)$ $b = 8.268(1)$ $c = 5.5396(7)$ $\beta = 100.517(11)^\circ$
Z = 2

X-ray Powder Pattern: Blue Lizard mine, White Canyon district, San Juan County, Utah, USA.
3.29 (100), 4.551 (80), 3.258 (58), 4.269 (50), 3.339 (43), 2.296 (22), 2.644 (21)

Chemistry:	(1)
Na ₂ O	17.00
MgO	3.42
MnO	3.38
CoO	7.68
NiO	2.53
SO ₃	45.41
H ₂ O	[20.20]
Total	99.63

(1) Blue Lizard mine, White Canyon district, San Juan County, Utah, USA; average of 5 electron microprobe analyses, H₂O calculated from stoichiometry; corresponds to
Na_{1.96}(Co_{0.36}Mg_{0.30}Mn_{0.17}Ni_{0.12})_{Σ=0.95}S_{2.02}O₈·4H₂O.

Polymorphism & Series: Forms a series with blödite and manganoblödite, from which it can be distinguished only with a chemical analysis.

Mineral Group: Blödite group.

Occurrence: Coating the walls of underground mine works, related to post-mining oxidation of primary U deposits of the Colorado Plateau type hosted by sandstones.

Association: Mn-Co-Ni-bearing blödite, chalcantite, gypsum, johannite, sideronatrite, quartz, feldspar.

Distribution: Blue Lizard mine, White Canyon district, San Juan County, Utah, USA.

Name: For the chemical composition of the M²⁺ structural site and relationship to blödite.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4271/1) and in the Museum Victoria, Melbourne, Australia (M52196).

References: (1) Kasatkin, A.V., F. Nestola, J. Plášil, J. Marty, D.I. Belakovskiy, A.A. Agakhanov, S.J. Mills, D. Pedron, A. Lanza, M. Favaro, S. Bianchin, I.S. Lykova, V. Goliáš, and W.D. Birch (2013) Manganoblödite, Na₂Mn(SO₄)₂·4H₂O, and cobaltoblödite, Na₂Co(SO₄)₂·4H₂O: Two new members of the blödite group from the Blue Lizard mine, San Juan County, Utah, USA. *Mineral. Mag.*, 77(3), 367-383. (2) (2015) *Amer. Mineral.*, 100, 2011 (abs. ref. 1).