Apexite $NaMg(PO_4)\cdot 9H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As needles and blades to 0.5 mm, elongated along [100] and flattened on {001}; in subparallel intergrowths. Crystals display {100}, {001}, {011}, $\{1\bar{1}\ 0\}$, and $\{0\bar{1}\ 2\}$.

Physical Properties: *Cleavage*: Perfect on {100}. *Fracture*: Curved. *Tenacity*: Brittle. Hardness = ~ 2 D(meas.) = 1.74(1) D(calc.) = 1.741 Slowly soluble in water.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous to satiny. *Optical Class*: Biaxial. $\alpha = 1.475(1)$ $\beta = 1.481(1)$ $\gamma = 1.487(1)$ 2V(meas.) = 88.5(3)° 2V(calc.) = 90° *Orientation*: $Z \wedge a = 40°$.

Cell Data: Space Group: $P\bar{1}$. $a = 6.9296(7)$ $b = 11.9767(13)$ $c = 14.9436(19)$ $\alpha = 92.109(6)°$ $\beta = 102.884(7)°$ $\gamma = 105.171(7)°$ Z = 4

X-ray Powder Pattern: Apex mine, Lander Co., Nevada, USA.
2.762 (100), 4.301 (96), 4.68 (75), 5.11 (61), 2.876 (46), 4.008 (44), 14.63 (35)

Chemistry:	(1)	(2)	(3)
Na_2O	10.42	9.26	10.18
MgO	16.23	14.42	13.24
P_2O_5	26.24	23.31	23.32
H_2O	[53.01]	53.01	56.23
Total	105.90	100.00	100.00

(1) Apex mine, Lander Co., Nevada, USA; average of 6 electron microprobe analyses, H_2O calculated from structure. (2) Normalized analysis (1); corresponds to $Na_{0.91}Mg_{1.09}P_{1.00}O_{13.00}H_{17.91}$. (3) $NaMg(PO_4)\cdot 9H_2O$.

Occurrence: Secondary mineral, formed as efflorescent crusts on mine walls by the oxidative weathering of a uranium deposit by meteoric water.

Association: Andersonite, calcite, čejkaite, gaylussite, goethite.

Distribution: From the Apex mine, ~ 4.5 km SSW of Austin, Lander Co., Nevada, USA.

Name: For the mine that produced the first samples.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA. (65563 and 65564); also at the Museum Victoria, Melbourne, Victoria, Australia (M53381).

References: (1) Kampf, A.R., S.J. Mills, B.P. Nash, M. Jensen, and T. Nikischer (2015) Apexite, $NaMg(PO_4)\cdot 9H_2O$, a new struvite-type phase with a heteropolyhedral cluster. Amer. Mineral., 100, 2695-2701.