Natrolemoynite $Na_4Zr_2Si_{10}O_{26}\cdot 9H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As compact radial aggregates and spheres to 4 mm, consisting of bladed to prismatic crystals to 2 mm, elongate along [001], showing {100}, {010}, and {001}.

Physical Properties: *Cleavage*: Perfect on {100} and {010}, poor on {001}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = 3 D(meas.) = 2.47(1) D(calc.) = 2.50 Nonfluorescent.

Optical Properties: Transparent to translucent. *Color*: Colorless to white, may have a slightly pink to red tinge, possibly from inclusions of lepidocrocite. *Streak*: White. *Luster*: Vitreous to subadamantine.
Optical Class: Biaxial (-). α = 1.533(1) β = 1.559(1) γ = 1.567(1) 2V(meas.) = 63(1)° 2V(calc.) = 57(1)° *Dispersion*: Weak, *r* and *v* crossed. *Orientation*: $X = b$, $Z \wedge a = 40°$ in obtuse β. Nonpleochroic.

Cell Data: *Space Group*: *C*2/*m*. a = 10.5150(2) b = 16.2534(4) c = 9.1029(3) β = 105.462(2)° Z = 2

X-ray Powder Pattern: Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada. 8.132 (100), 5.975 (40), 3.564 (40), 3.974 (35), 3.490 (35), 8.832 (30), 3.693 (30)

Chemistry:

	(1)
Na_2O	7.47
K_2O	1.29
CaO	0.37
MnO	0.12
Al_2O_3	0.04
SiO_2	54.51
TiO_2	0.38
ZrO_2	21.97
Nb_2O_5	1.01
H_2O	[14.72]
Total	101.88

(1) Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada; average electron microprobe analysis supplemented by IR spectroscopy, H_2O calculated; corresponds to $(Na_{2.66}K_{0.30}Ca_{0.07}Mn_{0.02})_{\Sigma=3.05}(Zr_{1.96}Nb_{0.08}Ti_{0.05})_{\Sigma=2.09}(Si_{9.99}Al_{0.01})_{\Sigma=10}O_{25.79}\cdot 9H_2O$.

Mineral Group: Lemoynite group.

Occurrence: Late stage in pegmatite cutting nepheline syenite.

Association: Microcline, lemoynite, lepidocrocite, galena, sphalerite, calcite, pyrite (in altered pegmatite); biotite, microcline, albite, magnetite, chlorite, zircon (in unaltered pegmatite).

Distribution: At the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Name: Alludes to the Na dominance (*natro*) and polymorphic relationship to *lemoynite*.

Type: Canadian Museum of Nature, Ottawa, Ontario, Canada (81534).

References: (1) McDonald, A.M. and G.Y. Chao (2001) Natrolemoynite, a new hydrated sodium zirconosilicate from Mont Saint-Hilaire, Quebec: description and structure determination. Can. Mineral., 39, 1295-1306. (2) (2002) Amer. Mineral., 87, 997 (abs. ref. 1).