Simmonsite Na_2LiAlF_6

Crystal Data: Monoclinic. *Point Group*: 2/*m*. *Twinning*: Complex polysynthetic.

Physical Properties: *Cleavage*: None. *Fracture*: Subconchoidal. *Tenacity*: Not extremely brittle. Hardness = 2.5-3 D(meas.) = 3.05(2) D(calc.) = 3.06(1)

Optical Properties: Transparent to translucent. *Color*: Pale buff cream. *Streak*: White. *Luster*: Greasy.
Optical Class: Biaxial, very nearly isotropic. n = 1.359(1)

Cell Data: *Space Group*: $P2_1/n$. a = 5.2842(1) b= 5.3698(1) c = 7.5063(2) β = 89.98(1)° Z = 4

X-ray Powder Pattern: Zapot pegmatite, Gillis Range, Mineral Co., Nevada.
4.33 (100), 1.877 (90), 2.25 (70), 2.65 (60), 2.173 (50), 2.152 (40), 1.526 (25)

Chemistry:

	(1)
Na	23.4
Al	13.9
F	58.6
Li	[3.56]
Total	99.46

(1) Zapot pegmatite, Gillis Range, Mineral Co., Nevada; average of 7 electron microprobe analyses, Li calculated; corresponds to $Na_{1.98}Li_{1.00}Al_{1.00}F_6$.

Mineral Group: Perovskite supergroup, elpasolite subgroup.

Occurrence: A late-stage hydrothermal mineral in a breccia pipe that cuts an amazonite-topaz-zinnwaldite pegmatite.

Association: Cryolite, cryolithionite, elpasolite.

Distribution: In the Zapot amazonite-topaz-zinnwaldite pegmatite, Gillis Range, Mineral Co., Nevada [TL]. From the Katugin massif, Transbaikalia, Russia.

Name: Honors Professor William B. *Simmons* (b. 1943), Professor of Mineralogy and Petrology, University of New Orleans, New Orleans, USA, in recognition of his numerous contributions about granitic pegmatites and their mineralogy.

Type Material: U.S. National Museum, Smithsonian Institution, Washington, D.C., USA.

References: (1) Foord, E.E., J.T. O'Connor, J.M. Hughes, S.J. Sutley, A.U. Falster, A.E. Soregaroli, F.E. Lichte, and D.E. Kile (1999) Simmonsite, Na_2LiAlF_6, a new mineral from the Zapot amazonite-topaz-zinnwaldite pegmatite, Hawthorne, Nevada, U.S.A. Amer. Mineral., 84, 769-772. (2) Ross, K.C., R.H. Mitchell, and A.R. Chakhmouradian (2003) The crystal structure of synthetic simmonsite, Na_2LiAlF_6. J. Solid State Chem., 172, 95-101. (3) (2004) Amer. Mineral., 89(1), 252 (abs. ref. 2). (4) Sharygin, V.V. and N.V. Vladykin (2014) Mineralogy of cryolite rocks from the Katugin massif, Transbaikalia, Russia. in "Abstract Book of 30th International Conference on "Ore Potential of Alkaline, Kimberlite and Carbonatite Magmatism," 29 September - 02 October 2014 Antalya, Turkey", 166-168.