Aleksandrovite $KLi_3Ca_7Sn_2[Si_6O_{18}]_2F_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As lamellae, to 70 μm, and as zoned crystals to 0.8 mm.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = 4-4.5 VHN = 300 (50 g load). D(meas.) = 3.05(2) D(calc.) = 3.07(2) Fluoresces light-blue under SW UV.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous, pearly on cleavage surfaces.
Optical Class: Biaxial (-). α = 1.629(2) β = 1.635(4) γ = 1.638(2) 2V(meas.) = n.d. 2V(calc.) = –70.3° *Dispersion*: Strong, $r > v$. *Elongation*: Positive.

Cell Data: *Space Group*: *C*2/*c*. a = 17.01(2) b = 9.751(6)) c = 21.00(2) β = 112.45(8)° Z = 4

X-ray Powder Pattern: Darai-Pioz glacier, Tajikistan.
3.234 (100), 2.894 (42), 2.425 (42), 3.206 (34), 3.712 (33), 3.039 (28), 1.950 (25)

Chemistry:

	(1)		(1)
SiO_2	48.01	CaO	25.52
Al_2O_3	0.07	SrO	0.39
TiO_2	2.86	Na_2O	0.20
SnO_2	12.84	K_2O	2.91
ZrO_2	1.27	Li_2O	3.01
Nb_2O_5	0.11	F	1.71
Fe_2O_3	0.27	H_2O	[0.39]
Ce_2O_3	0.04	$-O = F_2$	0.72
MgO	0.05	Total	99.10

(1) Darai-Pioz glacier, Tajikistan; average of 17 electron microprobe analyses, H_2O calculated from stoichiometry, Li calculated from Li/K and Li/Ca ratios; corresponding to $(K_{0.93}Na_{0.10})_{\Sigma=1.03}Li_{3.02}(Ca_{6.82}Sr_{0.06}Mn_{0.04}Mg_{0.02})_{\Sigma=6.94}(Sn_{1.28}Ti_{0.54}Zr_{0.15}Fe_{0.05}Nb_{0.01})_{\Sigma=2.03}(Si_{11.98}Al_{0.02})_{\Sigma=12}O_{36.00}[F_{1.35}(OH)_{0.65}]_{\Sigma=2.00}$.

Occurrence: In a zoned microcline-calcite vein with aegirine-hedenbergite, quartz, and albite in a glacial moraine boulder. The region contains carbonatites and an alkaline massif.

Association: Miserite, baratovite, katayamalite, Zr and hydroxyl analogues of alexandrovite, fluorite, Sn-titanite, bazirite, pabstite, Sn-sogdianite, sugilite, turkestanite, fluorapatite.

Distribution: From the Darai-Pioz glacier, at the junction of the Turkestan, Zeravshan, and Alay Mountain Ranges, Tajikistan.

Name: Honors the Russian geochemist, geologist, and mineralogist Stanislav Mikhailovich Aleksandrov (b. 1932) for his contributions to the geology, geochemistry, and mineralogy of tin.

Type Material: A.E. Fersman Mineral Museum, Academy of Sciences, Moscow, Russia (3825/1).

References: (1) Pautov, L.A., A.A. Agakhanov, V.Yu. Karpenko, and F.G. Gafurov (2010) Aleksandrovite $KLi_3Ca_7Sn_2[Si_6O_{18}]_2F_2$ - a new tin mineral. Novye dannye o mineralakh, 45, 5-16 (in Russian). New data on minerals, 45, 5-16 (in English). (2) (2012) Amer. Mineral., 97, 1523 (abs. ref. 1).