

**Aleksandrovite****KLi<sub>3</sub>Ca<sub>7</sub>Sn<sub>2</sub>[Si<sub>6</sub>O<sub>18</sub>]<sub>2</sub>F<sub>2</sub>**

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As lamellae, to 70  $\mu\text{m}$ , 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 (-).  $\alpha = 1.629(2)$   $\beta = 1.635(4)$   $\gamma = 1.638(2)$  2V(meas.) = n.d. 2V(calc.) = -70.3° *Dispersion:* Strong,  $r > v$ . *Elongation:* Positive.

**Cell Data:** *Space Group:* C2/c.  $a = 17.01(2)$   $b = 9.751(6)$   $c = 21.00(2)$   $\beta = 112.45(8)^\circ$  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 <sub>2</sub>	48.01	CaO	25.52
Al <sub>2</sub> O <sub>3</sub>	0.07	SrO	0.39
TiO <sub>2</sub>	2.86	Na <sub>2</sub> O	0.20
SnO <sub>2</sub>	12.84	K <sub>2</sub> O	2.91
ZrO <sub>2</sub>	1.27	Li <sub>2</sub> O	3.01
Nb <sub>2</sub> O <sub>5</sub>	0.11	F	1.71
Fe <sub>2</sub> O <sub>3</sub>	0.27	H <sub>2</sub> O	[0.39]
Ce <sub>2</sub> O <sub>3</sub>	0.04	<u>-O=F<sub>2</sub></u>	0.72
MgO	0.05	Total	99.10

(1) Darai-Pioz glacier, Tajikistan; average of 17 electron microprobe analyses, H<sub>2</sub>O calculated from stoichiometry, Li calculated from Li/K and Li/Ca ratios; corresponding to (K<sub>0.93</sub>Na<sub>0.10</sub>)<sub>Σ=1.03</sub>Li<sub>3.02</sub>(Ca<sub>6.82</sub>Sr<sub>0.06</sub>Mn<sub>0.04</sub>Mg<sub>0.02</sub>)<sub>Σ=6.94</sub>(Sn<sub>1.28</sub>Ti<sub>0.54</sub>Zr<sub>0.15</sub>Fe<sub>0.05</sub>Nb<sub>0.01</sub>)<sub>Σ=2.03</sub>(Si<sub>11.98</sub>Al<sub>0.02</sub>)<sub>Σ=12</sub>O<sub>36.00</sub>[F<sub>1.35</sub>(OH)<sub>0.65</sub>]<sub>Σ=2.00</sub>.

**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<sub>3</sub>Ca<sub>7</sub>Sn<sub>2</sub>[Si<sub>6</sub>O<sub>18</sub>]<sub>2</sub>F<sub>2</sub> - 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).