

**Baratovite** **$\text{KLi}_3\text{Ca}_7(\text{Ti, Zr})_2\text{Si}_{12}\text{O}_{36}\text{F}_2$** 

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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$  or  $m$ . As platy deposits, to 5 cm; in patchy granular aggregates. *Twinning:* On  $\{001\}$ , common.

**Physical Properties:** *Cleavage:* Perfect on  $\{001\}$ . *Tenacity:* Brittle. Hardness = 3.5–4 D(meas.) = 2.92 D(calc.) = 2.91 Brilliant bluish white fluorescence under SW UV.

**Optical Properties:** Transparent to translucent. *Color:* White. *Luster:* Vitreous, pearly in part.

*Optical Class:* Biaxial (+). *Orientation:*  $X \wedge \perp \{001\} \simeq 50^\circ$ . *Dispersion:*  $r > v$ , strong.  $\alpha = 1.670$   $\beta = 1.670\text{--}1.671$   $\gamma = 1.673\text{--}1.677$   $2V(\text{meas.}) = 32^\circ\text{--}60^\circ$

**Cell Data:** *Space Group:*  $C2/c$  or  $Cc$ .  $a = 16.941(3)$   $b = 9.746(2)$   $c = 20.907(3)$   $\beta = 112.50(10)^\circ$   $Z = 4$

**X-ray Powder Pattern:** Dara-i-Pioz massif, Tajikistan.

3.22 (100), 2.41 (20), 1.92 (17), 3.02 (5), 3.54 (4), 1.60 (4), 1.49 (4)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)
SiO <sub>2</sub>	50.46	52.31	Li <sub>2</sub> O	2.05
TiO <sub>2</sub>	9.55	10.99	Na <sub>2</sub> O	0.70
ZrO <sub>2</sub>	2.28		K <sub>2</sub> O	2.96
Fe <sub>2</sub> O <sub>3</sub>	0.50	0.29	F	1.05
Nb <sub>2</sub> O <sub>5</sub>	0.72		H <sub>2</sub> O	1.21
MnO	0.12	0.22	–O = F <sub>2</sub>	0.44
CaO	30.36	28.25	<b>Total</b>	<b>100.31</b>
				<b>99.83</b>

(1) Dara-i-Pioz massif, Tajikistan; corresponds to  $(\text{K}_{0.90}\text{Na}_{0.28})_{\Sigma=1.18}\text{Li}_{1.96}\text{Ca}_{7.75}(\text{Ti}_{1.71}\text{Zr}_{0.26})_{\Sigma=1.97}\text{Si}_{12}\text{O}_{37.00}\text{F}_{0.79}$ . (2) Iwagi Islet, Japan; by electron microprobe, Li by flame photometry, H<sub>2</sub>O by gravimetry, and F by specific ion electrode; corresponding to  $(\text{K}_{0.85}\text{Na}_{0.10})_{\Sigma=0.95}\text{Li}_{3.00}(\text{Ca}_{6.94}\text{Mn}_{0.04})_{\Sigma=6.98}(\text{Ti}_{1.90}\text{Fe}_{0.05}^{3+})_{\Sigma=1.95}\text{Si}_{12}\text{O}_{35.78}[(\text{OH})_{1.85}\text{F}_{0.25}]_{\Sigma=2.10}$ .

**Occurrence:** An accessory mineral in quartz-albite-aegirine veinlets and in albitites in syenites (Dara-i-Pioz massif, Tajikistan); a fine-grained accessory mineral in a small aegirine syenite stock in coarse-grained biotite granite (Iwagi Islet, Japan).

**Association:** Miserite, ekanite, titanite, quartz, albite, aegirine (Dara-i-Pioz massif, Tajikistan); albite, aegirine, pectolite, sugilite, allanite, titanite, andradite, zircon, apatite (Iwagi Islet, Japan).

**Distribution:** From the Dara-i-Pioz massif, Alai Range, Tien Shan, Tajikistan. On Iwagi Islet, Ehime Prefecture, Japan.

**Name:** For Rauf Baratovich Baratov (1921–), Soviet petrologist, Institute of Geology, Dushanbe, Tajikistan.

**Type Material:** Mineralogical Museum, University of St. Petersburg, St. Petersburg, 16250–16252; Institute of Mineralogy and Geochemistry of Rare Elements, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 76077, 77839, vis5062.

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