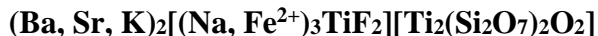


Fluorbarytolamprophyllite

Crystal Data: Monoclinic. *Point Group:* 2/m. As thin prismatic crystals to 3.5 mm flattened on (100) and elongate along [010], their radial aggregates to 0.2 mm, and as rims on crystals of fluorlamprophyllite.

Physical Properties: *Cleavage:* Perfect on {100}. *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = 2.5 D(meas.) = n.d. D(calc.) = 3.662 Nonfluorescent.

Optical Properties: Translucent. *Color:* Brown, light to dark yellow in thin section. *Streak:* n.d. *Luster:* Vitreous to pearly.

Optical Class: Biaxial (+). $\alpha = 1.738(3)$ $\beta = 1.745(4)$ $\gamma = 1.777(4)$ $2V(\text{meas.}) = 55(5)^\circ$ $2V(\text{calc.}) = 51^\circ$ *Dispersion:* Very strong, $r > v$. *Orientation:* $X = b$, a and $c \parallel (100)$.

Pleochroism: Distinct, $Z = \text{brown}$, $Y \approx X = \text{very pale brown to colorless}$. *Absorption:* $Z > Y \approx X$.

Cell Data: *Space Group:* C2/m. $a = 19.520(5)$ $b = 7.0995(17)$ $c = 5.3896(20)$ $\beta = 96.657(23)^\circ$ $Z = 2$

X-Ray Diffraction Pattern: Niva intrusion, Kola Alkaline Province, northwestern Russia.

2.780 (100), 3.230 (96), 3.414 (67), 3.726 (59), 3.013 (53), 2.662 (52), 9.692 (40)

Chemistry:

	(1)		(1)
Na ₂ O	10.01	TiO ₂	27.31
K ₂ O	2.65	ZrO ₂	0.22
MgO	0.43	Nb ₂ O ₅	0.91
CaO	0.64	Ta ₂ O ₅	0.15
SrO	5.59	SiO ₂	29.35
BaO	16.23	F	2.41
MnO	0.50	H ₂ O	0.26
FeO	4.44	<u>-O = F</u>	<u>1.01</u>
Al ₂ O ₃	0.08	Total	100.17

(1) Niva intrusion, Kola Alkaline Province, northwestern Russia; average electron microprobe analysis supplemented by IR spectroscopy, H₂O by TGA; corresponding to (Ba_{0.865}Sr_{0.44}K_{0.46}Na_{0.26}) $\Sigma=2.025$ (Na_{2.38}Ca_{0.09}Fe_{0.47}Mn_{0.06}) $\Sigma=3.00$ (Ti_{2.79}Mg_{0.09}Fe_{0.035}Nb_{0.06}Zr_{0.015}Ta_{0.01}) $\Sigma=3.00$ (Si_{13.99}Al_{0.01}) $\Sigma=4.00$ O₁₆[F_{1.04}O_{0.72}(OH)_{0.24}] $\Sigma=2.00$.

Mineral Group: Seidozerite supergroup, lamprophyllite group.

Occurrence: In agpaitic syenites of an alkaline complex.

Association: Potassium feldspar, Ti-rich aegirine-augite, aenigmatite, alkaline amphiboles, astrophyllite, natrolite, ferripyrophyllite.

Distribution: In the Niva intrusion and Mokhnatye Roga alkaline dike, Kola Alkaline Province, northwestern Russia.

Name: Indicates the F-dominant analogue of barytolamprophyllite and Ba-dominant analogue of fluorlamprophyllite.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (4916/1 and 4916/2).

References: (1) Filina, M.I., S.M. Aksenov, N.V. Sorokhtina, N.V. Chukanov, N.N. Kononkova, D.I. Belakovskiy, S.N. Britvin, L.N. Kogarko, A.D. Chervonnyi, and R.K. Rastsvetaeva (2019) The new mineral fluorbarytolamprophyllite, (Ba,Sr,K)₂[(Na,Fe²⁺)₃TiF₂][Ti₂(Si₂O₇)₂O₂] and chemical evolution of lamprophyllite-group minerals in agpaitic syenites of the Kola Peninsula. *Mineralogy and Petrology*, 113, 533-553.