

Crystal Data: Monoclinic. *Point Group:* 2/m. As sheaf-like aggregates of prismatic crystals to 2 cm, showing {001}, {100}, {010} and two other forms.

Physical Properties: *Cleavage:* Imperfect. *Tenacity:* n.d. *Fracture:* n.d. Hardness = 5.5
D(meas.) = 3.03(1) D(calc.) = 3.05(1)

Optical Properties: Transparent. *Color:* Orange to a light coffee-color. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.683(1)$ $\beta = 1.690(2)$ $\gamma = 1.820(5)$ $2V(\text{meas.}) = 37(10)^\circ$
 $2V(\text{calc.}) = 27(6)^\circ$ *Orientation:* $a = Z$, $b = Y$, $c \wedge X = 27^\circ$ in obtuse β . *Dispersion:* Medium, $r > v$.
Pleochroism: $X = Z =$ colorless, $Y =$ light brown.

Cell Data: *Space Group:* C2/m. $a = 14.216(2)$ $b = 13.755(3)$ $c = 7.767(5)$ $\beta = 116.7(1)^\circ$ $Z = 1$

X-ray Powder Pattern: Mt. Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.
3.16 (100), 6.31 (28), 6.93 (26), 3.02 (25), 2.577 (25), 3.55 (24), 3.09 (24)

Chemistry:	(1)		(1)
Na ₂ O	5.32	Al ₂ O ₃	0.03
K ₂ O	6.96	SiO ₂	38.00
SrO	0.11	ZrO ₂	0.11
ZnO	0.09	TiO ₂	25.12
BaO	12.63	Nb ₂ O ₅	0.43
FeO	0.38	<u>H₂O</u>	<u>8.02</u>
MgO	0.39	Total	99.17
MnO	1.58		

(1) Mt. Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia; average electron microprobe analysis, H₂O by TGA; corresponds to Na_{4.34}K_{3.74}(Ba_{2.08}Sr_{0.03})_{Σ=2.11}(□_{1.07}Mn_{0.56}Mg_{0.24}Fe_{0.13})_{Σ=2}[(Ti_{7.94}Nb_{0.08}Zr_{0.02})_{Σ=8.04}O_{6.40}(OH)_{1.60}][Si₄O₁₂]₄·10.46H₂O.

Mineral Group: Lemleinite subgroup of the labuntsovite group.

Occurrence: In alkaline pegmatites in an alkaline massif.

Association: Calcite, strontianite, aegirine, microcline, nepheline (Mt. Kukisvumchorr); kuzmenkoite-Mn, aegirine, mangan-neptunite, chabazite, nontronite (Mt. Karnasurt); microcline, aegirine (Mt. Maly Punkaruaiiv).

Distribution: From the Kirovskii mine, Mt. Kukisvumchorr [TL], Khibiny alkaline massif and at Mt. Karnasurt and Mt. Maly Punkaruaiiv, Lovozero massif, Kola Peninsula, Russia.

Name: Suffix, *Ba*, refers to the barium-dominance in the D site of a member of the *lemleinite* subgroup.

Type Material: A.E. Fersman Mineralogical Museum, Moscow, Russia (90235).

References: (1) Chukanov, N.V., I.V. Pekov, R.K. Rastsvetaeva, A.E. Zadov, and V.V. Nedel'ko (2001) Lemleinite-Ba, Na₂K₂Ba_{1+x}Ti₄(Si₄O₁₂)₂(O,OH)₄·5H₂O, a new mineral of the labuntsovite group. Zap. Vseross. Mineral. Obshch., 130(3), 36-43 (in Russian, English abs.). (2) (2002) Amer. Mineral., 87, 1733-1734 (abs. ref. 1). (3) Chukanov, N.V., I.V. Pekov, and A.P. Khomyakov (2002) Recommended nomenclature for labuntsovite-group minerals. Eur. J. Mineral., 14, 165-173. (4) Pekov, I.V. (2007) New minerals from former Soviet Union countries, 1998-2006. Mineral. Almanac, 11, 31.