

**Crystal Data:** Monoclinic. *Point Group:* 2/m. Crystals lamellar prismatic with dominant {100} and minor {010} and {130}. Forms radial sheaf-like and random aggregates, to 10 cm.

**Physical Properties:** *Cleavage:* Perfect on (100). *Tenacity:* Brittle. *Fracture:* n.d. Hardness = 3 D(meas.) = 3.62(2) D(calc.) = 3.58 (for empirical Formula)

**Optical Properties:** Transparent to translucent. *Color:* Brown to bright yellow. *Luster:* Vitreous. *Optical Class:* Biaxial (+).  $\alpha = 1.750(12)$   $\beta = 1.755$   $\gamma = 1.799(15)$   $2V(\text{meas.}) = 40.5^\circ$  *Dispersion:* Strong,  $r > v$ . *Orientation:*  $X \wedge c = 10^\circ$ ,  $Y = a$ . *Pleochroism:* Weak, green-brown.

**Cell Data:** Space Group: *P2/m*.  $a = 19.741(5)$   $b = 7.105(4)$   $c = 5.408(2)$   $\beta = 96.67(1)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Inagli massif, south Yukutsk, Russia. 2.797 (100), 9.87 (96), 3.45 (90), 3.275 (78), 3.75 (65), 2.610 (43), 3.040 (41)

<b>Chemistry:</b>	(1)	(2)		(1)	(2)
Na <sub>2</sub> O	11.14	11.99	Al <sub>2</sub> O <sub>3</sub>	0.44	0.16
K <sub>2</sub> O	0.94	1.03	TiO <sub>2</sub>	27.80	27.31
CaO	0.36	0.10	Nb <sub>2</sub> O <sub>5</sub>	n.d.	0.64
SrO	0.65	n.d.	SiO <sub>2</sub>	28.75	29.08
BaO	24.12	25.32	F	1.18	n.d.
MgO	0.34	0.83	H <sub>2</sub> O	1.83	n.d.
MnO	1.10	1.09	-O = F <sub>2</sub>	[0.50]	n.d.
Fe <sub>2</sub> O <sub>3</sub>	0.78	1.81	Total	98.93	99.36

(1) Inagli massif, south Yukutsk, Russia; average of 20 electron microprobe analyses, H<sub>2</sub>O by TGA; corresponds to Na<sub>2.95</sub>K<sub>0.17</sub>Ca<sub>0.05</sub>Sr<sub>0.05</sub>Ba<sub>1.29</sub>Mn<sub>0.13</sub>(Ti<sub>2.86</sub>Fe<sub>0.08</sub>Mg<sub>0.07</sub>) $\Sigma=3.01$ [(Si<sub>3.93</sub>Al<sub>0.07</sub>) $\Sigma=4.00$ O<sub>14.00</sub>]O<sub>1.94</sub>(OH)<sub>1.67</sub>F<sub>0.51</sub>. (2) Kovdor massif, Russia; average of 20 electron microprobe analyses.

**Polymorphism & Series:** Orthorhombic and monoclinic polytypes.

**Occurrence:** In peralkaline pegmatite dikes cutting alkaline ultramafic rocks.

**Association:** Aegirine, albite, ancylite, batisite, diopside, eckermannite, inelinite, leucosphenite, lorenzenite, natrolite, neptunite, strontium apatite (Inagli); apatite, cancrinite, eudialyte-group minerals, lorenzenite, lueshite, nepheline, pectolite, pyrrhotite, thomsonite-Ca, titanite, diopside, hedenbergite, aegirine (Kovdor). In cancrinite-bearing pegmatite (Kovdor), it forms aggregates with pectolite and cancrinite, often intergrown with lorenzenite. In nepheline-bearing pegmatite (Kovdor), it forms radial aggregates of lamellar crystals with lorenzenite, titanite and eudialyte group minerals.

**Distribution:** From the Inagli massif, south Yukutsk and the Kovdor massif, Kola Peninsula, Russia.

**Name:** For its composition (*Na* and *Ba*) and relation to other *lamprophyllite*-group minerals; a suffix indicates the monoclinic polytype.

**Type Material:** Geological Museum, Institute of Geology and Geophysics, Russian Academy of Science, Novosibirsk, Russia (XIII-274/1) and the A.E. Fersman Mineralogical Museum, Russian Academy of Science, Moscow, Russia (90837 and 90843).

**References:** (1) Chukanov, N.V., M.M. Moiseev, I.V. Pekov, K.A. Lazebnik, R.K. Rastsvetaeva, N.V. Zayakina, G. Ferraris, and G. Ivaldi (2004) Nabalamprophyllite Ba(Na,Ba){Na<sub>3</sub>Ti [Ti<sub>2</sub>O<sub>2</sub> Si<sub>4</sub>O<sub>14</sub>](OH,F)<sub>2</sub>}, a new layer titanosilicate of the lamprophyllite group from the Inagli and Kovdor alkaline-ultrabasic massifs, Russia. *Zapiski Vseross. Mineral. Obshch.*, 133(1), 59-72 (in Russian, English abstract). (2) (2005) *Amer. Mineral.*, 90(7), 1230 (abs. ref. 1). (3) Sokolova, E. and F.C. Hawthorne (2008) From structure topology to chemical composition. IV. Titanium silicates: the orthorhombic polytype of Nabalamprophyllite from the Lovozero Massif, Kola Peninsula, Russia. *Can. Mineral.*, 46, 1322-1331. (4) (2009) *Amer. Mineral.*, 94(7), 1083 (abs. ref. 3).