**Saamite** **$Ba\square TiNbNa_3Ti(Si_2O_7)_2O_2(OH)_2(H_2O)_2$**

**Crystal Data**: Triclinic. *Point Group*: $\bar{1}$. As platy crystals to 180 $\mu$m. *Twinning*: Ubiquitous.

**Physical Properties**: *Cleavage*: Perfect, on {001}. *Fracture*: Uneven. *Tenacity*: n.d. Hardness = ~ 3 D(meas.) = n.d. D(calc.) = 3.243

**Optical Properties**: Transparent. *Color*: Colorless to pale tan. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (+). $\alpha$ = 1.760(5) $\beta$ = 1.770(5) $\gamma$ = 1.795(5) 2V(meas.) = 69(2)° 2V(calc.) = 65° *Dispersion*: Medium, $r > v$. *Pleochroism*: None.

| *Orientation*: | *a* | *b* | *c* |
|---|---|---|---|
| *X* | 85.0° | 94.8° | 11.1° |
| *Y* | 60.1° | 30.0° | 93.9° |
| *Z* | 149.6° | 60.5° | 79.6° |

**Cell Data**: *Space Group*: $P\bar{1}$. $a$ = 5.437(2) $b$ = 7.141(3) $c$ = 21.69(1) $\alpha$ = 92.97(1)° $\beta$ = 96.07(1)° $\gamma$ = 90.01(1)° Z = 2

**X-ray Powder Pattern**: Kirovskii mine, Khibiny alkaline massif, Kola Peninsula, Russia. 21.539 (100), 2.790 (15), 2.692 (14), 3.077 (13), 7.180 (11), 2.865 (11), 2.887 (9)

**Chemistry**:

| | (1) | | (1) |
|---|---|---|---|
| $Nb_2O_5$ | 12.24 | SrO | 2.51 |
| $TiO_2$ | 20.37 | CaO | 1.76 |
| $SiO_2$ | 29.07 | $K_2O$ | 0.77 |
| $Al_2O_3$ | 0.08 | $Na_2O$ | 8.39 |
| FeO | 0.32 | $H_2O$ | [5.77] |
| MnO | 5.87 | F | 1.71 |
| MgO | 0.04 | $-O = F_2$ | 0.72 |
| BaO | 11.31 | Total | 99.49 |

(1) Kirovskii mine, Khibiny alkaline massif, Kola Peninsula, Russia; average of 22 electron microprobe analyses supplemented by IR spectroscopy, $H_2O$ from stoichiometry; corresponding to $(Ba_{0.61}Sr_{0.20}K_{0.13}\square_{0.06})_{\Sigma=1}(\square_{0.74}Ca_{0.26})_{\Sigma=1}(Na_{2.22}Mn_{0.55}Fe^{2+}_{0.04}\square_{0.19})_{\Sigma=3}Si_{3.97}O_{19.26}H_{5.26}F_{0.74}$.

**Occurrence**: In a hydrothermally-altered pegmatite body emplaced in nepheline syenite.

**Association:** Natrolite, barytolamprophyllite, kazanskyite, nechelyustovite, hydroxylapatite, belovite-(La), belovite-(Ce), gaidonnayite, nenadkevichite, epididymite, apophyllite-(KF), sphalerite.

**Distribution**: From the Kirovskii mine (+252 level), Mount Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.

**Name**: Honors the *Saami*, indigenous people populating parts of the Kola Peninsula in Russia, Norway, Sweden, and Finland.

**Type Material**: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4432/1, 4432/2).

**References**: (1) Cámara, F., E. Sokolova, Y.A. Abdu and F.C. Hawthorne (2014) Saamite, $Ba\square TiNbNa_3Ti(Si_2O_7)_2O_2(OH)_2(H_2O)_2$, a group-III Ti-disilicate mineral from the Khibiny alkaline massif, Kola Peninsula, Russia: description and crystal structure. Can. Mineral., 52(4), 745-762. (2) (2016) Amer. Mineral., 101, 1018-1019 (abs. ref. 1).