Vladykinite $Na_3Sr_4(Fe^{2+}Fe^{3+})Si_8O_{24}$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As "pointed" prismatic crystals with a rhombic to pseudohexagonal cross-section, to several mm. Also in parallel or radiating clusters.

Physical Properties: *Cleavage*: Distinct on {100}. *Fracture*: n.d. *Tenacity*: Brittle. Hardness = 5 D(meas.) = > 3.22 D(calc.) = 3.51 Resembles titanite.

Optical Properties: Transparent. *Color*: Pinkish to grayish brown, colorless in thin section. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (–). $\alpha = 1.624(2)$ $\beta = 1.652(2)$ $\gamma = 1.657(2)$ 2V(meas.) = 44(1)° 2V(calc.) = 45(1)° *Orientation*: $X \wedge a = 5.1°$ in β obtuse, $Z \wedge c = 4.7°$ in β acute, $Y = b$.

Cell Data: *Space Group*: $P2_1/c$. $a = 5.21381(13)$ $b = 7.9143(2)$ $c = 26.0888(7)$ $\beta = 90.3556(7)°$ $Z = 2$

X-ray Powder Pattern: Mt. Maly, Murun complex, southwestern Yakutia, Russia.
2.957 (100), 2.826 (100), 3.612 (58), 3.146 (37), 2.470 (32), 4.290 (30), 3.339 (30)

Chemistry:	(1)		(1)
Na_2O	6.74	MnO	1.60
MgO	0.14	FeO	[4.76]
Al_2O_3	1.38	Fe_2O_3	[4.69]
SiO_2	41.66	ZnO	1.33
K_2O	0.16	SrO	34.99
CaO	2.77	La_2O_3	0.22
TiO_2	0.10	Ce_2O_3	0.16
		Total	98.90

(1) Mt. Maly, Murun complex, southwestern Yakutia, Russia; average of 16 electron microprobe analyses supplemented by Raman, Mössbauer and laser ablation-inductively coupled plasma-mass spectrometry, FeO and Fe_2O_3 calculated; corresponds to $(Na_{2.45}Ca_{0.56})_{\Sigma=3.01}(Sr_{3.81}K_{0.04}Ba_{0.02}La_{0.02}Ce_{0.01})_{\Sigma=3.90}(Fe^{2+}_{0.75}Fe^{3+}_{0.66}Mn_{0.26}Zn_{0.16}Al_{0.12}Mg_{0.05}Ti_{0.01})_{\Sigma=2.01}(Si_{7.81}Al_{0.19})_{\Sigma=8.00}O_{24}$.

Occurrence: An early magmatic phase in a dike of coarse-grained feldspathoidal syenite (lujavrite) in an alkaline igneous complex.

Association: Aegirine, potassium feldspar, eudialyte, lamprophyllite, nepheline.

Distribution: From Mt. Maly, north-central part of the Murun complex, southwestern Yakutia, eastern Siberia, Russia.

Name: Honors Nikolay V. Vladykin (b. 1944), Vinogradov Institute of Geochemistry, Irkutsk, Russia, for his contributions to the study of alkaline rocks.

Type Material: Robert B. Ferguson Museum of Mineralogy, Winnipeg, Manitoba, Canada (M7853).

References: (1) Chakhmouradian, A.R., M.A. Cooper, N. Ball, E.P. Reguir, L. Medici, Y.A. Abdu, and A.A. Antonov (2014) Vladykinite, $Na_3Sr_4(Fe^{2+}Fe^{3+})Si_8O_{24}$: A new complex sheet silicate from peralkaline rocks of the Murun complex, eastern Siberia, Russia. Amer. Mineral., 99, 235-241.