

Crystal Data: Hexagonal. *Point Group:* 3m. As dendritic aggregates of needle-like or tabular hexagonal crystals, to 0.14 mm.

Physical Properties: *Cleavage:* n.d. *Fracture:* n.d. *Tenacity:* Brittle. Hardness = ~ 2-3
D(meas.) = n.d. D(calc.) = 2.656

Optical Properties: Transparent. *Color:* Colorless, turns white on exposure to air.
Streak: White. *Luster:* Vitreous.
Optical Class: Uniaxial (-). $\omega = 1.492(2)$ $\varepsilon = 1.489(2)$

Cell Data: *Space Group:* P31c. $a = 10.804(3)$ $c = 22.011(6)$ $Z = 4$

X-ray Powder Pattern: Naboko cone, Tolbachik volcano, Kamchatka Peninsula, Russia.
2.707 (100), 2.718 (91), 3.943 (80), 2.868 (62), 2.894 (35), 1.970 (21), 2.647(10)

Chemistry:	(1)	(2)
Na ₂ O	26.99	28.22
K ₂ O	10.99	10.72
CaO	4.27	6.38
MgO	0.51	
CuO	1.21	
ZnO	0.81	
PbO	1.58	
SO ₃	54.93	54.68
Total	101.30	100.00

(1) Naboko cone, Tolbachik volcano, Kamchatka Peninsula, Russia; average of 7 electron microprobe analyses; corresponds to $\text{K}_{2.05}\text{Na}_{7.65}(\text{Ca}_{0.67}\text{Mg}_{0.11}\text{Cu}_{0.13}\text{Zn}_{0.09}\text{Pb}_{0.06})_{\Sigma=1.06}\text{S}_{6.03}\text{O}_{24}$.

(2) $\text{K}_2\text{Na}_8\text{Ca}(\text{SO}_4)_6$.

Occurrence: As sublimate incrustations and/or products of reaction between rock and volcanic gas on the surface of basalt scoria in an active fumarole.

Association: Aphthitalite, thénardite.

Distribution: At the Naboko cone, Tolbachik Fissure Eruption, Tolbachik volcano, Kamchatka Peninsula, Russia.

Name: Honors Russian scientist, Professor Rimma Sergeevna Bubnova (b. 1951), Institute of Silicate Chemistry, Russian Academy of Sciences, St-Petersburg State University, Russia, for her contributions to the crystal chemistry of vanadates, silicates, borates, borosilicates and other inorganic oxysalts.

Type Material: Mineralogical Museum, St. Petersburg State University, St. Petersburg, Russia, (1/19635).

References: (1) Gorelova, L.A., L.P. Vergasova, S.V. Krivovichev, E.Yu. Avdontseva, S.V. Moskaleva, G.A. Karpov, and S.K. Filatov (2016) Bubnovaite, $\text{K}_2\text{Na}_8\text{Ca}(\text{SO}_4)_6$, a new mineral species with modular structure from the Tolbachik volcano, Kamchatka peninsula, Russia. *Eur. J. Mineral.*, 28(3), 677-686. (2) (2016) *Amer. Mineral.*, 101, 2778 (abs. ref. 1).