Saranchinaite $Na_2Cu(SO_4)_2$

Crystal Data: Monoclinic. *Point Group*: 2. Crystals, to 0.1 mm, form druses, spherulites, irregularly shaped grains, or microcrystalline masses.

Physical Properties: *Cleavage*: None. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.937 Water-soluble and sensitive to air humidity. Transforms to kröhnkite on exposure to air at 87% relative humidity and 25°C.

Optical Properties: Transparent to translucent. *Color*: Very light-blue or nearly white to sky-blue; light gray in transmitted light. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.517(2) β = 1.531(2) γ = 1.559(2) 2V(meas.) = n.d. 2V(calc.) = 71.6°

Cell Data: Space Group: $P2_1$. a = 9.0109(5) b = 15.6355(8) c = 10.1507(5) β = 107.079(2)° Z = 8

X-ray Powder Pattern: Tolbachik volcano, Kamchatka, Russia.
3.765 (100), 2.712 (98), 2.535 (65), 7.828 (60), 6.091 (50), 7.671 (47), 4.634 (46)

Chemistry:

	(1)	(2)
Na_2O	18.38	13.99
K_2O	2.23	
CaO	0.16	
CuO	24.72	28.55
ZnO	0.78	
SO_3	52.79	57.46
Total	99.05	100.00

(1) Tolbachik volcano, Kamchatka, Russia; average of 10 electron microprobe analyses; corresponds to $(Na_{1.81}K_{0.14}Ca_{0.01})_{\Sigma=1.96}(Cu_{0.95}Zn_{0.03})_{\Sigma=0.98}S_{2.01}O_8$. (2) $Na_2Cu(SO_4)_2$.

Occurrence: A sublimate from volcanic gases with temperature ~600°C at a fumarole.

Association: Euchlorine, anhydrite, itelmenite, hermannjahnite, chalcocyanite, thénardite, aphthitalite, hematite.

Distribution: From the Saranchinaitovaya fumarole, Naboko Scoria cone, Tolbachik volcano, Kamchatka, Far-Eastern Region, Russia.

Name: Honors Professor Galina M. Saranchina (1911-2004), St. Petersburg State University, Russia, for her distinguished teaching and scientific achievements in metamorphic petrology.

Type Material: Mineralogical Museum, St. Petersburg State University, St. Petersburg, Russia (19639).

References: (1) Siidra, O.I., E.A. Lukina, E.V. Nazarchuk, W. Depmeier, R.S. Bubnova, A.A. Agakhanov, E.Yu. Avdontseva, S.K. Filatov, and V.M. Kovrugin (2018) Saranchinaite, $Na_2Cu(SO_4)_2$, a new exhalative mineral from Tolbachik volcano, Kamchatka, Russia, and a product of the reversible dehydration of kröhnkite, $Na_2Cu(SO_4)_2(H_2O)_2$. Mineral. Mag., 82(2), 257-274. (2) (2019) Amer. Mineral., 104(4), 627-628 (abs. ref 1).