

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As prismatic, lathlike, or lamellar crystals to 0.03 mm typically combined in brush-like aggregates and crusts to 1.5 mm across. *Twinning:* SEM images reveal X-shaped interpenetrant crystal groups suggestive of twins.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.011 Nonfluorescent.

Optical Properties: Transparent. *Color:* Colorless to snow-white (aggregates). *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.552$ $\beta \approx \gamma = 1.567$ 2V(meas.) = Small. Non-pleochroic.

Cell Data: *Space Group:* Pbcm. $a = 15.487(3)$ $b = 7.258(2)$ $c = 6.601(2)$ $Z = 4$

X-Ray Diffraction Pattern: Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. 15.49 (100), 3.881 (54), 3.289 (52), 3.038 (51), 6.56 (30), 4.653 (29), 3.113 (29)

Chemistry:	(1)	(2)
Na ₂ O	3.79	
K ₂ O	8.01	13.69
CaO	0.10	
CuO	0.21	
Al ₂ O ₃	30.08	29.64
Fe ₂ O ₃	0.50	
SiO ₂	1.62	
P ₂ O ₅	0.66	
As ₂ O ₅	32.23	33.40
SO ₃	22.59	23.27
Total	99.79	100.00

(1) Arsenatnaya fumarole, Tolbachik volcano, Kamchatka peninsula, Russia; average electron microprobe analysis; corresponding to (K_{0.57}Na_{0.41}Ca_{0.01})_{Σ=0.99}(Al_{1.99}Fe³⁺_{0.02}Cu_{0.01})_{Σ=2.02}(As_{0.95}S_{0.95}Si_{0.09}P_{0.03})_{Σ=2.02}O₉. (2) KAl₂O(AsO₄)(SO₄).

Occurrence: A sublimes at an active volcanic fumarole.

Association: Alumoklyuchevskite, langbeinite, urusovite, lammerite, lammerite-β, ericlxmanite, kozyrevskite, hematite.

Distribution From the Arsenatnaya fumarole, Second scoria cone of the Northern Breakthrough of the Great Tolbachik Fissure Eruption, Tolbachik volcano, Kamchatka peninsula, Far-Eastern Region, Russia.

Name: Honors Russian mineralogist Tursun Pnazorovich *Nishanbaev* (1955-2017), former Head of the Natural History Museum, Ilmen Natural Reserve, Miass, Russia, for contributions to the mineralogy of anthropogenic counterparts of volcanic fumaroles formed on the burning dumps of coal mines.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (5379/1).

References: (1) Pekov, I.V., N.V. Zubkova, V.O. Yapaskurt, D.I. Belakovskiy, S. Britvin, A.A. Agakhanov, A.G. Turchkova, E.G. Sidorov, A.V. Kutyrev, V.A. Blatov, and D.Y. Pushcharovsky (2022 in Press) Nishanbaevite, KAl₂O(AsO₄)(SO₄), a new As/S-ordered arsenate-sulfate mineral of fumarolic origin. (2) Miyawaki, R., F. Hatert, M. Pasero, and S.J. Mills (2019) IMA Commission on New Minerals, Nomenclature and Classification (CNMNC) Newsletter 50. Mineral. Mag., 83, 616.