Katiarsite $KTiO(AsO_4)$

Crystal Data: Orthorhombic. *Point Group*: *mm*2. As prismatic to acicular, typically sword-like, crystals to 0.15 mm, elongated along [010] and flattened on (100), displaying {011}, {201}, {100}, and {001}. Also as sprays or chaotic groups.

Physical Properties: *Cleavage*: None. *Fracture:* Uneven. *Tenacity*: Brittle. Hardness = n.d. (synthetic analog H = 3.) D(meas.) = n.d. D(calc.) = 3.49

Optical Properties: Transparent. *Color*: Colorless. *Streak*: n.d. *Luster*: Vitreous. *Optical Class*: Biaxial (+). α = 1.784(3) β = 1.792(3) γ = 1.870(5) 2V(meas.) = Small. 2V(calc.) = 37° *Dispersion* & *Pleochroism*: None. *Orientation*: $X = b$, $Y = a$, $Z = c$.

Cell Data: Space Group: $Pna2_1$ (by analogy to synthetic analogue.) a = 13.174(4) b = 6.5635(10) c = 10.805(2) Z = 8

X-ray Powder Pattern: Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. 2.826 (100), 2.809 (96), 5.62 (74), 3.157 (66), 4.18 (19), 2.704 (19), 5.91 (17)

Chemistry:	(1)	(2)
K_2O	18.98	19.47
Fe_2O_3	5.07	
TiO_2	27.49	33.03
As_2O_5	47.48	47.50
Total	99.02	100.00

(1) Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia; average of 4 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to $K_{1.00}(Ti_{0.85}Fe^{3+}_{0.16})_{\Sigma=1.01}As_{1.02}O_5$. (2) $KTiO(AsO_4)$.

Occurrence: Formed in sublimates encrusting basaltic scoria around a volcanic fumarole.

Association: Hatertite, bradaczekite, johillerite, yurmarinite, tilasite, arsmirandite, hematite, tenorite, As-bearing orthoclase, fluorophlogopite, aphthitalite.

Distribution: From the Arsenatnaya fumarole, Second scoria cone, Northern Breakthrough of the Great Tolbachik Fissure Eruption, Tolbachik volcano, Kamchatka, Russia.

Name: For the mineral's chemical composition, *ka*lium *ti*tanyl *ar*senate.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4504/1).

References: (1) Pekov, I.V., V.O. Yapaskurt, S.N. Britvin, N.V. Zubkova, M.F. Vigasina, and E.G. Sidorov (2016) New arsenate minerals from the Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. V. Katiarsite, $KTiO(AsO_4)$. Mineral. Mag., 80(4), 639-646. (2) (2017) Amer. Mineral., 102, 469 (abs. ref. 1).