

Crystal Data: Monoclinic. *Point Group:* 2/m. As tabular, prismatic or dipyramidal crystals to 0.2 mm, or as equant to flattened grains.

Physical Properties: *Cleavage:* One imperfect direction. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3 D(meas.) = n.d. D(calc.) = 4.26

Optical Properties: Transparent. *Color:* Bright emerald-green to light green, sometimes with a bluish hue. *Streak:* Light green. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.758(7)$ $\beta = 1.782(7)$ $\gamma = 1.805(8)$ $2V(\text{meas.}) = 85(5)^\circ$ $2V(\text{calc.}) = 88^\circ$ *Dispersion:* Strong, $r > v$.

Cell Data: *Space Group:* C2/c. $a = 17.0848(12)$ $b = 5.7188(4)$ $c = 16.5332(12)$ $\beta = 91.716(6)^\circ$ Z = 4

X-ray Powder Pattern: Arsenatnaya fumarole, Tolbachik volcano, Kamchatka Peninsula, Russia. 2.733 (100), 8.34 (95), 5.433 (84), 2.921 (66), 2.853 (58), 2.451 (47), 3.274 (45)

| Chemistry: | (1) | (2) |
|--------------------------------|-------|--------|
| Na ₂ O | 0.83 | |
| K ₂ O | 10.71 | 13.46 |
| MgO | 0.35 | |
| CaO | 0.21 | |
| CuO | 38.67 | 37.89 |
| ZnO | 0.20 | |
| Al ₂ O ₃ | 4.68 | 4.86 |
| Fe ₂ O ₃ | 0.36 | |
| P ₂ O ₅ | 0.78 | |
| V ₂ O ₅ | 0.04 | |
| As ₂ O ₅ | 43.01 | 43.79 |
| Total | 99.84 | 100.00 |

(1) Arsenatnaya fumarole, Tolbachik volcano, Kamchatka Peninsula, Russia; average electron microprobe analysis supplemented by Raman spectroscopy; corresponds to $K_{2.36}Na_{0.28}Mg_{0.09}Ca_{0.04}Cu_{5.04}Zn_{0.04}Al_{0.95}Fe^{3+}_{0.05}P_{0.11}As_{3.88}O_{18}$. (2) $K_3Cu_5AlO_2(AsO_4)_4$.

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

Association: Shchurovskyite, bradaczekite, tenorite, johillerite, tilasite, melanarsite, hematite, apthitalite, langbeinite, orthoclase.

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

Name: Honors Russian mineralogist, volcanologist, and geologist, Dmitry Ivanovich Sokolov (1788-1852), Professor of Mineralogy and Geology at St. Petersburg University, and Academician of the Russian Academy of Sciences. One of the founders of the Russian Mineralogical Society (1817) and first editor of Gornyi Zhurnal (Mining Journal), an early Russian periodical on geology, mineralogy and mining sciences (1825). He also authored mineralogy textbooks.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (94138).

References: (1) Pekov, I.V., N.V. Zubkova, D.I. Belakovskiy, V.O. Yapaskurt, M.F. Vigasina, E.G. Sidorov, and D.Y. Pushcharovsky (2015) New arsenate minerals from the Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. IV. Shchurovskyite, $K_2CaCu_6O_2(AsO_4)_4$ and dmisokolovite, $K_3Cu_5AlO_2(AsO_4)_4$. Mineral. Mag., 79(7), 1737-1753. (2) (2016) Amer. Mineral., 101, 2572-2573 (abs. ref. 1).