

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals are stout prismatic, slightly elongated along [001], to 0.3 mm, with {100}, {110}, {120}, {130}, {111}, {263}, {315}, isolated and in radiating aggregates.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 4–5.5
VHN = 302–413, 357 average (25 g load). D(meas.) = n.d. D(calc.) = 4.32

Optical Properties: Transparent. *Color:* Olive-green; gray in reflected light with pale green internal reflections. *Streak:* Pale yellow. *Luster:* Vitreous.
Optical Class: Biaxial. *Pleochroism:* Distinct; olive-green \parallel c; yellowish to brownish green \perp c.
 $\alpha = [1.87]$ $\beta = \text{n.d.}$ $\gamma = [1.98]$ 2V(meas.) = n.d.

Cell Data: *Space Group:* $Pnma$. $a = 7.421(2)$ $b = 6.754(3)$ $c = 13.624(5)$ $Z = 4$

X-ray Powder Pattern: Tolbachik volcano, Russia.
3.077 (100), 3.391 (60), 3.342 (60), 2.542 (60), 2.500 (60), 2.275 (60), 3.71 (30)

Chemistry:	(1)
SO ₃	21.44
MoO ₃	25.29
V ₂ O ₅	0.88
CuO	49.81
ZnO	1.76
PbO	0.63
Total	99.81

(1) Tolbachik volcano, Russia; by electron microprobe, average of 18 analyses, (OH)¹⁻ and H₂O shown absent by IR; corresponds to (Cu_{2.82}Zn_{0.10}Pb_{0.01})_{Σ=2.93}O[(Mo_{0.79}S_{0.20}V_{0.04})_{Σ=1.03}O₄](SO₄).

Occurrence: A rare sublimation product in fumaroles.

Association: Chalcocyanite, dolerophanite, euchlorine, fedotovite, tenorite, cuprian anglesite, gold.

Distribution: From the Tolbachik fissure volcano, Kamchatka, Russia.

Name: Honors Dr. Lidia Pavlovna Vergasova (1941–), Institute of Vulcanology, Petropavlovsk-Kamchatskii, Russia, for her contributions to the mineralogy of that volcanic region.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia; Natural History Museum, Basel, Switzerland.

References: (1) Bykova, E.Y., P. Berlepsch, P.M. Kartashov, J. Brugger, T. Armbruster, and A.J. Criddle (1998) Vergasovaite Cu₃O[(Mo, S)O₄][SO₄], a new copper-oxy-molybdate-sulfate from Kamchatka. *Schweiz. Mineralog. Petrogr. Mitt.*, 78, 479–488. (2) Berlepsch, P., T. Armbruster, J. Brugger, E.Y. Bykova, and P.M. Kartashov (1999) The crystal structure of vergasovaite Cu₃O[(Mo, S)O₄SO₄] and its relation to synthetic Cu₃O[MoO₄]₂. *Eur. J. Mineral.*, 11, 101–110. (3) (2000) *Amer. Mineral.*, 85, 264–265 (abs. refs. 1 and 2).