

**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . As interrupted crusts of crude equant, prismatic, or tabular crystals or grains to 0.3 mm.

**Physical Properties:** *Cleavage:* Perfect on  $\{001\}$ . *Tenacity:* Brittle. *Fracture:* Stepped. Hardness =  $\sim 3$  D(meas.) = n.d. D(calc.) = 3.790 Hydrolyses (becomes dull and blue) after one hour and slowly dissolves in  $\text{H}_2\text{O}$  at room temperature.

**Optical Properties:** Translucent. *Color:* Black, dark green in thin fragments. *Streak:* Dark green. *Luster:* Oleaginous on crystal faces, vitreous on cleavage surfaces.

*Optical Class:* Biaxial (-).  $\alpha = 1.646(3)$   $\beta = 1.715(6)$   $\gamma = 1.734(6)$   $2V(\text{meas.}) = 60(15)^\circ$   $2V(\text{calc.}) = 54^\circ$  *Pleochroism:* Strong,  $Z = Y =$  dark green with brownish hue, almost black in thicker grains,  $X =$  green. *Absorption:*  $Z \approx Y > X$ . *Orientation:*  $Y = c$ .

**Cell Data:** *Space Group:*  $P2_1/n$ .  $a = 9.3986(3)$   $b = 4.8911(1)$   $c = 18.2293(5)$   $\beta = 104.409(3)^\circ$   $Z = 2$

**X-Ray Diffraction Pattern:** Arsenatnaya fumarole, Tolbachik Volcano, Kamchatka, Russia. 3.658 (100), 3.699 (78), 9.07 (63), 2.576 (51), 7.38 (44), 3.173 (40), 2.683 (36)

Chemistry:	(1)	(2)
$\text{K}_2\text{O}$	9.62	9.86
$\text{Rb}_2\text{O}$	0.49	
$\text{Cs}_2\text{O}$	0.24	
$\text{CaO}$	1.23	
$\text{CuO}$	35.28	33.29
$\text{PbO}$	19.25	23.35
$\text{SO}_3$	34.78	33.50
Total	100.89	100.00

(1) Arsenatnaya fumarole, Tolbachik Volcano, Kamchatka, Russia; average electron microprobe analysis supplemented by IR spectroscopy; corresponding to  $(\text{K}_{1.88}\text{Pb}_{0.79}\text{Ca}_{0.20}\text{Rb}_{0.05}\text{Cs}_{0.02})_{\Sigma=2.94}\text{Cu}_{4.07}\text{S}_{3.99}\text{O}_{18}$ . (2)  $(\text{K}_2\text{Pb})\text{Cu}_4\text{O}_2(\text{SO}_4)_4$ .

**Occurrence:** A sublimate at an active volcanic fumarole.

**Association:** Euchlorine, fedotovite, wulfite, chalcocyanite, dolerophanite, dravertite, hermannjahnite, alumoklyuchevskite, klyuchevskite, piypite, cryptochalcite, cesiodymite, anglesite, langbeinite, calciolangbeinite, metathénardite, belomarinaite, apthitalite, krashennikovite, steklite, anhydrite, hematite, tenorite, sanidine, sylvite, halite, lammerite, urusovite, gold.

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

**Name:** From the Greek eleon for 'oil', and melas for 'black', for its black color and oleaginous luster on crystal faces that is uncommon for sulfate minerals.

**Type Material:** A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (95347).

**References:** (1) Pekov, I.V., N.V. Zubkova, N.V. Chukanov, D.I. Belakovsky, E.G. Sidorov, S.N. Britvin, A.G. Turchkova, and D.Y. Pushcharovsky (2020) Eleomelanite,  $(\text{K}_2\text{Pb})\text{Cu}_4\text{O}_2(\text{SO}_4)_4$ , a new mineral species from the Tolbachik Volcano, Kamchatka, Russia. *Can. Mineral.*, 58, 625-636.