

**Crystal Data:** Monoclinic (pseudo-tetragonal). *Point Group:* 2/m. As lamellar crystals with octagonal outlines, to 0.1 mm, flattened on [001], either separate or combined into open-work clusters to 0.3 mm or interrupted crusts to 1 mm.

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness = n.d.* D(meas.) = n.d. D(calc.) = 3.844

**Optical Properties:** Transparent. *Color:* Green. *Streak:* Pale green. *Luster:* Strong vitreous. *Optical Class:* Biaxial, pseudo-uniaxial (-).  $\alpha = 1.611(2)$   $\beta = \gamma = 1.698(2)$   $2V(\text{meas.}) \approx 0^\circ$  *Pleochroism:* Strong,  $Z \approx Y = \text{grass-green}$ ,  $X = \text{turquoise-blue}$ . *Absorption:*  $Z \approx Y > X$ .

**Cell Data:** Space Group:  $P2_1/n$ .  $a = 10.1273(9)$   $b = 10.1193(8)$   $c = 21.1120(16)$   
 $\beta = 102.272(8)^\circ$   $Z = 4$

**X-ray Powder Pattern:** Arsenatnaya fumarole, Kamchatka Peninsula, Russia.  
10.33 (100), 3.576 (24), 7.04 (18), 6.33 (14), 2.920 (14), 2.529 (14), 2.460 (14)

Chemistry:	(1)	(2)
Na <sub>2</sub> O	6.67	7.72
K <sub>2</sub> O	0.82	
CuO	38.77	39.66
ZnO	0.25	
PbO	3.17	
Bi <sub>2</sub> O <sub>3</sub>	17.66	19.36
SO <sub>3</sub>	32.81	33.26
Total	100.15	100.00

(1) Arsenatnaya fumarole, Kamchatka Peninsula, Russia; average of 7 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to Na<sub>2.63</sub>K<sub>0.21</sub>Cu<sub>5.96</sub>Zn<sub>0.04</sub>Bi<sub>0.93</sub>S<sub>5.01</sub>O<sub>24</sub>.

(2) Na<sub>3</sub>Cu<sub>6</sub>BiO<sub>4</sub>(SO<sub>4</sub>)<sub>5</sub>.

**Occurrence:** A sublimate on scoria around an active fumarole.

**Association:** Tenorite, hematite, langbeinite, apthitalite, krashennikovite, johillerite.

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

**Name:** From the Greek words *ελασμα*, meaning “lamella”, and *χλοη*, meaning “green shoot” or “green grass”, thus alluding to elasmochloite’s green color and lamellar crystal habit.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (96203).

**References:** (1) Pekov, I.V., S.N. Britvin, A.A. Agakhanov, M.F. Viggasina, and E.G. Sidorov (2019) Elasmochloite, Na<sub>3</sub>Cu<sub>6</sub>BiO<sub>4</sub>(SO<sub>4</sub>)<sub>5</sub>, a new fumarolic mineral from the Tolbachik volcano, Kamchatka, Russia. *Eur. J. Mineral.*, 31(5-6), 1025-1032. (2) (2020) *Amer. Mineral.*, 105(10), 1600 (abs. ref. 1).