

Crystal Data: Monoclinic. *Point Group:* 2/m. As well-formed or crude, tabular or prismatic crystals to 0.1 mm; as aggregates or crusts to 1 mm. *Twinning:* Thin polysynthetic.

Physical Properties: *Cleavage:* Imperfect in one direction. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = ~3 D(meas.) = 2.57 D(calc.) = 2.563 Water soluble and hygroscopic.

Optical Properties: Transparent. *Color:* Bright green. *Streak:* Light green. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.660(3)$ $\beta = 1.690(5)$ $\gamma = 1.718(5)$ $2V(\text{meas.}) = 90(5)^\circ$ $2V(\text{calc.}) = 86.5^\circ$ *Pleochroism:* Distinct, Z = grass-green, Y = light yellowish green, X = pale green with a grayish hue. *Absorption:* $Z > Y > X$.

Cell Data: Space Group: $P2_1/c$. $a = 12.9010(6)$ $b = 16.4193(5)$ $c = 11.9614(5)$ $\beta = 113.691(6)^\circ$ $Z = 2$

X-ray Powder Pattern: Glavnaya Tenoritovaya fumarole, Tolbachik volcano, Russia. 11.87 (100), 5.969 (25), 5.905 (16), 6.585 (15), 5.231 (13), 2.924 (11), 3.135 (8)

Chemistry:	(1)
MgO	5.39
Cu	46.98
Cl	35.42
H ₂ O	[20.21]
- O = Cl ₂	8.00
Total	100.00

(1) Glavnaya Tenoritovaya fumarole, Second scoria cone, Tolbachik volcano, Kamchatka Peninsula, Russia; average of 5 electron microprobe analyses supplemented by Raman spectroscopy, H₂O calculated; corresponds to $\text{Cu}_{10.58}\text{Mg}_{2.40}\text{Cl}_{17.90}(\text{OH})_{8.06} \cdot 16.04\text{H}_2\text{O}$.

Occurrence: As sublimates on basaltic scoria near a volcanic fumarole vent (~100 °C.).

Association: Belloite, avdoninite, sylvite, carnallite, chlorothionite, dioskourite.

Distribution: From the Glavnaya Tenoritovaya ("Major Tenorite") fumarole, Second scoria cone, Tolbachik volcano, Kamchatka Peninsula, Russia.

Name: Honors Feodosiy Nikolaevich Chernyshev (1856-1914), Russian geologist, Academician of the Russian Academy of Sciences and Director of Russian Geological Committee (1903-1914).

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4723/1).

References: (1) Pekov, I.V., N.V. Zubkova, V.O. Yapaskurt, D.I. Belakovskiy, I.S. Lykova, M.F. Viganina, D.A. Ksenofontov, S.N. Britvin, E.G. Sidorov, D.A. Khanin, and D.Yu. Pushcharovsky (2018) Feodosiyite, $\text{Cu}_{11}\text{Mg}_2\text{Cl}_{18}(\text{OH})_8 \cdot \text{H}_2\text{O}$, a new mineral from the Tolbachik volcano, Kamchatka, Russia. *Mineral. Mag.*, 82(5), 1079-1088. *Neues Jahrbuch für Mineralogie, Abhandlungen*, 195/1, 27-39. (2) (2019) *Amer. Mineral.*, 104(12), 1867 (abs. refs. 1 & 2).