

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As pseudo-cubic crystals  $<0.5\ \mu\text{m}$  within vacuoles in an As-(Te)-rich amorphous sulfur matrix and rarely as irregularly shaped aggregates to  $\sim 50\ \mu\text{m}$  within the amorphous sulfur matrix.

**Physical Properties:** *Cleavage:* n.d. *Tenacity:* n.d. *Fracture:* n.d. *Hardness:* = n.d.  $D(\text{meas.}) = \text{n.d.}$   $D(\text{calc.}) = 7.23$

**Optical Properties:** Semi-translucent. *Color:* Medium gray in reflected light; (synthetic) yellow, photosensitive and blackens readily upon exposure to light. *Streak:* n.d. *Luster:* n.d. *Optical Class:* n.d.

**Cell Data:** *Space Group:*  $Cmcm$ .  $a = 4.5670(9)$   $b = 12.803(3)$   $c = 5.202(1)$   $Z = 4$

**X-Ray Diffraction Pattern:** Calculated pattern.  
3.31 (100), 2.674 (73), 3.20 (43), 2.601 (28), 2.019 (21), 2.284 (19), 1.859 (16)

Chemistry:	(1)	(2)
Tl	61.40	61.69
I	36.00	38.31
Br	0.65	
Cl	0.21	
Total	98.26	100.00

(1) Avacha volcano, Kamchatka Peninsula, Russia; average EDS analysis; corresponds to  $\text{Tl}_{1.00}(\text{I}_{0.95}\text{Br}_{0.03}\text{Cl}_{0.02})$ . (2) TII.

**Occurrence:** In high-temperature volcanic fumaroles.

**Association:** Barite, mascagnite.

**Distribution:** From the Avacha volcano, Kamchatka Peninsula, Russia.

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**Type Material:** Museum Victoria, Melbourne, Australia (M53602).

**References:** (1) Okrugin, V., M. Favero, A. Liu, B. Etschmann, E. Plutachina, S. Mills, A.G. Tomkins, M. Lukasheva, V. Kozlov, S. Moskaleva, M. Chubarov, and J. Brugger (2017) Smoking gun for thallium geochemistry in volcanic arcs: Nataliyamalikite, TII, a new thallium mineral from an active fumarole at Avacha Volcano, Kamchatka Peninsula, Russia. *Amer. Mineral.*, 102, 1736-1746.