Sopcheite $Ag_4Pd_3Te_4$

Crystal Data: Orthorhombic. *Point Group:* n.d. Massive.

Physical Properties: Hardness = n.d. VHN = 134–209 (10 g load). D(meas.) = n.d. D(calc.) = 9.948

Optical Properties: Opaque. *Color:* Pale gray with a brownish tint in reflected light. *Luster:* Metallic. *Anisotropism:* Weak; yellowish red to bluish.

R_1–R_2: (400) 36.2–38.3, (420) 37.0–39.0, (440) 38.8–39.9, (460) 41.2–40.8, (480) 43.3–41.7, (500) 44.6–42.6, (520) 45.0–43.5, (540) 44.8–44.4, (560) 44.8–45.6, (580) 45.2–47.0, (600) 45.5–48.3, (620) 45.7–49.2, (640) 45.9–49.8, (660) 46.2–50.2, (680) 46.5–50.5, (700) 47.0–50.8

Cell Data: *Space Group:* n.d. $a = 9.645$ $b = 7.906$ $c = 11.040$ Z = 4

X-ray Powder Pattern: Monchegorsk deposits, Russia.
3.33 (100), 1.805 (70b), 2.56 (60), 2.70 (50), 2.30 (50b), 4.12 (40), 2.15 (40)

Chemistry:

	(1)	(2)	(3)
Ag	32.62	34.3	34.22
Pd	25.26	25.8	25.31
Fe	0.80		
Cu	0.09		
Ni	0.03		
Bi	0.17	0.5	
Te	41.32	39.7	40.47
Total	100.29	100.3	100.00

(1) Monchegorsk deposits, Russia; by electron microprobe, corresponding to $(Ag_{3.78}Fe_{0.18}Cu_{0.02}Ni_{0.01})_{\Sigma=3.99}Pd_{2.96}(Te_{4.04}Bi_{0.01})_{\Sigma=4.05}$. (2) Lac des Iles complex, Canada; by electron microprobe, average of three analyses; corresponding to $Ag_{4.00}Pd_{3.05}(Te_{3.92}Bi_{0.03})_{\Sigma=3.95}$.
(3) $Ag_4Pd_3Te_4$.

Occurrence: In veinlets cutting chalcopyrite (Monchegorsk deposits, Russia).

Association: Merenskyite, kotulskite, chalcopyrite, mackinawite (Monchegorsk deposits, Russia).

Distribution: From the Monchegorsk group of Cu–Ni deposits, in the Sopcha massif, Monchegorsk pluton, Kola Peninsula, Russia [TL]. In Canada, in Ontario, in the Roby zone, Lac des Iles complex; at the Levack West mine, Sudbury; at the Geordie Lake intrusion, Coldwell complex. From the Santo Tomas II porphyry copper deposit, Benguet, Philippines.

Name: For the type locality, Sopcha Mountain, Russia.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, Russia, 5709/1.

References: (1) Orsoev, D.A., S.A. Rezhenova, and A.N. Bodanova (1982) Sopcheite, $Ag_4Pd_3Te_4$, a new mineral from copper–nickel ores of the Monchegorsk pluton. Zap. Vses. Mineral. Obshch., 111, 114–117 (in Russian). (2) (1983) Amer. Mineral., 68, 472 (abs. ref. 1). (3) Dunning, G.R., J.H.G. Laflamme, and A.J. Criddle (1984) Sopcheite: a second Canadian occurrence, from the Lac-des-Iles Complex, Ontario. Can. Mineral., 22, 233–237.