Coldwellite Pd_3Ag_2S

Crystal Data: Isometric. *Point Group*: 432. As grains, to 150 μm.

Physical Properties: *Cleavage*: None. *Fracture*: None. *Tenacity*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 9.90

Optical Properties: Opaque. *Color*: n.d; white with a pinkish tint in reflected light. *Streak*: n.d. *Luster*: Metallic.
Optical Class: n.d. No internal reflections, pleochroism, bireflectance, or anisotropy.
R: (400) 40.0, (420) 40.4, (440) 40.9, (460) 41.5, (470) 41.9, (480) 42.1, (500) 42.7, (520) 43.4, (540) 43.9, (546) 44.9, (560) 44.1, (580) 44.1, (589) 44.0, (600) 44.1, (620) 44.2, (640) 44.6, (650) 45.0, (660) 45.2, (680) 45.9, (700) 46.6

Cell Data: Space Group: $P4_332$. a = 7.2470(8) Z = 4

X-ray Powder Pattern: Marathon Deposit, Coldwell Complex, Ontario, Canada.
2.427 (100), 1.428 (44), 2.302 (38), 2.195 (38), 0.9294 (24), 0.9208 (20), 1.352 (13)

Chemistry:	(1)	(2)
Pd	56.10	56.29
Fe	0.16	
Ag	38.20	38.05
S	5.63	5.66
Total	100.09	100.00

(1) Marathon Deposit, Coldwell Complex, Ontario, Canada; average of 23 electron microprobe analyses; corresponds to $(Pd_{2.99}Fe_{0.02})_{\Sigma=3.01}Ag_{2.00}S_{0.99}$. (2) Pd_3Ag_2S.

Occurrence: In a heavy-mineral concentrate from a Cu-PGE-Au deposit, disseminated in gabbro.

Association: Au-Ag alloy, hollingworthite, isoferroplatinum, keithconnite, kotulskite, mertieite-II, michenerite, palladoarsenide, sobolevskite, sperrylite, stillwaterite, vysotskite, Ti- and Cr-rich magnetite and ilmenite, pyrrhotite, chalcopyrite, pentlandite, bornite, cobaltite, galena.

Distribution: From the Marathon Deposit, Coldwell Complex, Ontario, Canada.

Name: For the locality (Coldwell alkaline complex) that produced the first specimens.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 86876).

References: (1) McDonald, A.M., L.J. Cabri, C.J. Stanley, D.J. Good, J. Redpath, G. Lane, J. Spratt, and D.E. Ames (2015) Coldwellite, Pd_3Ag_2S, a new mineral species from the Marathon Deposit, Coldwell Complex, Ontario, Canada. Can. Mineral., 53, 845-857. (2) (2017) Amer. Mineral., 102, 467-468 (abs. ref. 1).