

Crystal Data: Monoclinic. *Point Group:* 2/m. As euhedral to subhedral platelets, to 0.3 mm, and as intergrowths with vysotskite-braggite. *Twining:* Finely twinned.

Physical Properties: *Cleavage:* Perfect on {010}. *Tenacity:* Brittle. Hardness = ~3.5
VHN = 156-185, 171 average (50 g load). D(meas.) = n.d. D(calc.) = 9.41

Optical Properties: Opaque. *Color:* Cream with a brownish tint in reflected light.
Streak: Dark gray. *Luster:* Metallic. *Anisotropism:* Weak; brownish gray to grayish brown.
Bireflectance: Weak.

R₁-R₂: (400) 44.0-45.2, (420) 44.6-45.8, (440) 44.9-46.0, (460) 45.2-46.1, (480) 45.4-46.2,
(500) 45.6-46.4, (520) 45.9-46.8, (540) 46.3-47.2, (560) 46.7-47.8, (580) 47.4-48.5, (600) 48.0-49.0,
(620) 48.6-49.4, (640) 49.3-49.8, (660) 49.8-50.0, (680) 50.5-50.2, (700) 51.3-50.4

Cell Data: *Space Group:* C2/m (by analogy to parkerite). *a* = 11.521(11) *b* = 8.294(10) *c* = 8.321(6)
β = 134.38(5)° *Z* = 4

X-ray Powder Pattern: Kirakkajuppura deposit, Finland.
4.144 (10), 2.917 (9), 2.413 (8), 2.365 (7), 5.953 (6), 2.082 (5), 3.379 (3)

Chemistry:	(1)	(2)
Pd	39.46	40.02
Ir	1.08	
Pb	52.01	51.94
<u>S</u>	<u>7.90</u>	<u>8.04</u>
Total	100.15	100.00

(1) Kirakkajuppura deposit, Finland; by electron microprobe, average of 26 analyses on two grains; corresponds to (Pd_{2.96}Ir_{0.05})_{Σ=3.01}Pb_{2.02}S_{1.98}. (2) Pd₃Pb₂S₂.

Occurrence: In a platinum-group-element deposit in a layered ultramafic intrusive complex, formed under relatively high-Pb, low-S conditions.

Association: Vysotskite, zvyagintsevite, cuprorhodsite-malanite, laurite-erlichmanite, irarsite, keithconnite, gold, chalcopyrite, bornite, millerite.

Distribution: From the Kirakkajuppura deposit, Penikat layered complex, northeast of Kemi, Finland [TL]. In the Fedorova-Pana layered complex, Kola Peninsula, and the Noril'sk deposit, Siberia, Russia. In the Marathon Cu-PGE-Au deposit, Coldwell Complex, Ontario, Canada.

Name: Honors Joseph Hector Gilles *Laflamme* (1947–), Canada Centre for Mineral and Energy Technology (CANMET), Ottawa, Canada, for his work on platinum-group minerals.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (83195).

References: (1) Barkov, A.Y., R.F. Martin, T.A.A. Halkoaho, and A.J. Criddle (2002) Laflammeite Pd₃Pb₂S₂, a new platinum-group mineral species from the Penikat layered complex, Finland. *Can. Mineral.*, 40, 671-678. (2) (2003) *Amer. Mineral.*, 88, 476. (abs. ref. 1). (3) McDonald, A.M., L.J. Cabri, C.J. Stanley, D.J. Good, J. Redpath, G. Lane, J. Spratt, and D.E. Ames (2015) Coldwellite, Pd₃Ag₂S, a New Mineral Species from the Marathon Deposit, Coldwell Complex, Ontario, Canada. *Can. Mineral.*, 53(5), 845-857 [locality].