Laflammeite $Pd_3Pb_2S_2$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As euhedral to subhedral platelets, to 0.3 mm, and as intergrowths with vysotskite–braggite. *Twinning:* 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.

R_1–R_2: (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). $a = 11.521(11)$ $b = 8.294(10)$ $c = 8.321(6)$ $\beta = 134.38(5)^\circ$ $Z = 4$

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
S	7.90	8.04
Total	100.15	100.00

(1) Kirakkajuppura deposit, Finland; by electron microprobe, average of 26 analyses on two grains; corresponds to $(Pd_{2.96}Ir_{0.05})_{\Sigma=3.01}Pb_{2.02}S_{1.98}$. (2) $Pd_3Pb_2S_2$.

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].

Name: In honor of 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, Canada, 83195.

References: (1) Barkov, A.Y., R.F. Martin, T.A.A. Halkoaho, and A.J. Criddle (2002) Laflammeite $Pd_3Pb_2S_2$, a new platinum-group mineral species from the Penikat layered complex, Finland. Can. Mineral., 40, 671–678. (2) (??) Amer. Mineral., ??, ?? (abs. ref. 1).