Mertieite-I $Pd_{11}(Sb, As)_4$

Crystal Data: Hexagonal; possibly monoclinic, pseudohexagonal. *Point Group:* n.d.
As small grains, to 0.5 mm.

Physical Properties: Hardness = n.d. VHN = 561–593, 578 average (50 g load).
D(meas.) = n.d. D(calc.) = n.d.

Optical Properties: Opaque. *Color:* In polished section, brassy yellow. *Anisotropism:* Distinct.
R_1–R_2: n.d.

Cell Data: *Space Group:* n.d. $a = 15.04$ $c = 22.41$ $Z = 18$

X-ray Powder Pattern: Goodnews Bay, Alaska, USA.
2.278 (vs), 2.171 (vs), 2.232 (m), 2.017 (m), 1.918 (m), 1.861 (m), 1.572 (m)

Chemistry:

	(1)
Pd	72.9
Cu	< 1.2
Sb	15.3
As	9.2
Total	< 98.6

(1) Goodnews Bay, Alaska, USA; by electron microprobe, average of four grains; corresponding to $(Pd_{11.03}Cu_{0.30})_{\Sigma=11.33}(Sb_{2.02}As_{1.98})_{\Sigma=4.00}$.

Polymorphism & Series: Dimorphous with isomertieite.

Occurrence: As fine grains in precious metal placer concentrates, apparently derived from ultramafic source rock.

Association: Gold, chromite, laurite, mertieite-II, Pt–Ir–Os alloys.

Distribution: In the USA, from the placer dredgings at Goodnews Bay, Alaska [TL].

Name: To honor John Beaver Mertie, Jr. (1888–1980), geologist, U.S. Geological Survey, who provided the original material; "I" to distinguish its unique composition and crystallography from that of mertieite-II and isomertieite.

Type Material: National Museum of Natural History, Washington, D.C., USA, 132499.

References: (1) Desborough, G.A., J.J. Finney, and B.F. Leonard (1973) Mertieite, a new palladium mineral from Goodnews Bay, Alaska. Amer. Mineral., 58, 1–10. (2) Cabri, L.J., J.H.G. Laflamme, J.M. Stewart, J.F. Rowland, and T.Z. Chen (1975) New data on some platinum arsenides and antimonides. Can. Mineral., 13, 321–335.