

Crystal Data: Tetragonal. *Point Group:* 4mm. As droplet shaped or irregular grains, to 0.05 mm.

Physical Properties: *Cleavage:* None. *Fracture:* None. *Tenacity:* Sectile. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 9.53

Optical Properties: Opaque. *Color:* Steel gray; bright creamy white in reflected light.
Streak: Black. *Luster:* Metallic.

Optical Class: n.d.

R₁-R₂: (470) 57.6-47.5, (546) 60.85-50.8, (589) 62.8-53.0, (650) 66.7-57.5

Cell Data: *Space Group:* P4mm (synthetic). *a* = 3.7125(8) *c* = 25.62(1) *Z* = 4

X-ray Powder Pattern: Skaergaard intrusion, Kangerdlunssuaq area, East Greenland.
2.137 (100), 1.8596 (70), 1.3042 (60), 1.1181 (55), 1.8337 (40), 1.0663 (30), 0.8459 (25)

Chemistry:	(1)	(2)
Pd	29.86	35.82
Pt	3.08	
Au	3.70	
Cu	61.96	64.18
Fe	0.59	
Pb	0.17	
Total	99.36	100.00

(1) Skaergaard intrusion, East Greenland; average of 11 EDS analyses, corresponding to
(Pd_{0.862}Au_{0.058}Pt_{0.049}Fe_{0.028}Pb_{0.003})(Cu_{2.996}Fe_{0.004})_{Σ=3}.

(2) PdCu₃.

Occurrence: As the crystallized products of immiscible melts in tholeiitic gabbro and that formed at temperatures at of below 508° C, in a highly differentiated layered intrusion.

Association: Bornite-chalcocite, bornite with trace Ni-Co and Zn sulfides, skaergaardite, keithconnite, vasilite, zvyagintsevite, (Cu,Pd,Au), (Pd,Cu,Sn), (Pt,Fe,Cu,Pd) alloys, and unnamed phases Au₃Cu and PdAuCu.

Distribution: Platinova Reef, Skaergaard intrusion, Kangerdlunssuaq area, East Greenland.

Name: Honors Troels F.D. Nielsen (b. 1950), a geologist with the Geological Survey of Denmark and Greenland.

Type Material: Geologisk Museum, Copenhagen K, Denmark, 2008.1.

References: (1) Macdonald, A.M., L.J. Cabri, N.S. Rudashevsky, C.J. Stanley, V.N. Rudashevsky, and K.C. Ross (2008) Nielsenite, PdCu₃, a new platinum-group intermetallic mineral species from the Skaergaard intrusion, Greenland. *Can. Mineral.*, 46, 709–716. (2) (2009) *Amer. Mineral.*, 94, 401 (abs. ref. 1).