## Miessiite $Pd_{11}Te_2Se_2$

**Crystal Data**: Cubic. *Point Group*: 4/*m* $\bar{3}$ 2/*m*. As equant grains < 1 mm.

**Physical Properties**: *Cleavage*: n.d. *Tenacity*: Malleable. *Fracture*: n.d. Hardness = 2-2.5 VHN = 348-370, 362 average (100 g load). D(meas.) = n.d. D(calc.) = 10.94

**Optical Properties**: Opaque. *Color*: Black; light gray (pinkish gray in oil) in reflected light.
*Streak*: n.d. *Luster*: Metallic.
*Optical Class*: Isotropic.
R: (470) 48.88 $(29.5)_{oil}$, (546) 51.63 $(31.6)_{oil}$, (589) 53.91 $(33.7)_{oil}$, (650) 56.82 $(36.65)_{oil}$

**Cell Data**: *Space Group*: *Fd*3*m*. *a* = 12.448(2) Z = 8

**X-Ray Diffraction Pattern**: Miessijoki river, Lemmenjoki area, Inari Commune, Finland.
2.197 (100), 2.395 (80), 1.271 (30), 1.875 (25), 1.555 (25), 1.305 (25), 2.543 (20)

**Chemistry**:

| | (1) | (2) |
|---|---|---|
| Pd | 75.17 | 73.91 |
| Se | 9.61 | 9.97 |
| Te | 17.06 | 16.11 |
| Total | 101.84 | 100.00 |

(1) Miessijoki river, Lemmenjoki area, Inari Commune, Finland; average electron microprobe analysis; corresponds to $Pd_{11.02}Te_{2.09}Se_{1.90}$. (2) $Pd_{11}Te_2Se_2$.

**Occurrence**: With gold and PGM nuggets in a placer sample from a river draining glaciofluvial gravels, sands, terraces, poorly-sorted sandy till and weathered bedrock.

**Association**: Stillwaterite, isomertieite, mertieite-II, cooperite, braggite, kotulskite, vincentite, tantalite, thorianite, pyrite, magnetite, chromite, isoferroplatinum, laurite, Os-Ir-Ru alloy.

**Distribution**: From the Miessijoki river, Lemmenjoki area, Inari Commune, Finnish Lapland, Finland.

**Name**: After the locality, the *Miessi*joki river (in Saami language, Miessijohka).

**Type Material**: Finnish Museum of Natural History, Geological Museum, University of Helsinki, Finland (D3004).

**References**: (1) Kojonen, K.K., M. Tarkian, A.C. Roberts, R. Törnroos, and S. Heidrich (2007) Miessiite, $Pd_{11}Te_2Se_2$, a new mineral species from Miessijoki, Finnish Lapland, Finland. Can. Mineral., 45, 1221-1227.