

Crystal Data: Isometric. *Point Group:* $\bar{4} 3m$. As equant grains to 0.5 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 5.5-6 VHN = 537-584 (15 g load). *D(meas.):* = n.d. *D(calc.):* = 7.30

Optical Properties: Opaque. *Color:* Black; light gray in reflected light in air, brownish gray in oil. *Streak:* Black. *Luster:* Metallic.

Optical Class: Isotropic.

R_{air}-R_{oil}: (470) 38.02- 20.91, (546) 38.87- 21.76, (589) 39.18- 21.84, (650) 39.30- 22.12

Cell Data: *Space Group:* $F\bar{4} 3m$. *a* = 9.563(1) *Z* = 4

X-ray Powder Pattern: Hitura mine, Nivala, west-central Finland.

5.531 (100), 2.885 (90), 2.389 (90), 1.841 (90), 1.690 (80), 2.194 (70), 1.952 (60)

Chemistry:	(1)
Fe	0.59
Ni	0.09
Co	0.08
Cu	5.48
Mo	12.32
Re	53.61
Os	0.84
<u>S</u>	<u>26.77</u>
Total	99.78

(1) Hitura mine, Nivala, west-central Finland; average of 34 electron microprobe analyses, corresponding to (Cu_{0.83}Fe_{0.10}Ni_{0.02}Co_{0.01}) $\Sigma=0.96$ (Re_{2.79}Mo_{1.22}Os_{0.04}) $\Sigma=4.03$ S_{8.01}.

Occurrence: In a heavy mineral concentrate derived from a serpentinized, disseminated sulfide and PGM-bearing, ultramafic intrusion.

Association: Pentlandite, chromite, pyrrhotite, valleriite, chalcopyrite, cubanite, mackinawite, sperrylite, michenerite, irarsite, froodite, hollingworthite.

Distribution: From the Hitura mine, 13 km south of Nivala, west-central Finland and the Stillwater complex, Montana, USA. Other reported occurrences are the Coldwell complex, Ontario, Canada; the Lukkulaivaara complex, Karelia, and Monchegorsk, Kola Peninsula, Russia; Ekojoki, Finland, and two localities in Sweden.

Name: Honors Prof. Mahmud Tarkian (b. 1941) of the University of Hamburg, Germany, who earlier described an occurrence of the mineral.

Type Material: Finnish Museum of Natural History, Geological Museum, University of Helsinki, Finland; C4001.

References: (1) Kojonen, K.K., A.C. Roberts, O.-P. Isomäki, V.F. Knauf, B. Johanson, and L. Pakkanen (2004) Tarkianite, (Cu,Fe)(Re,Mo)₄S₈, a new mineral species from the Hitura mine, Nivala, Finland. *Can. Mineral.*, 42, 539-544. (2) (2005) *Amer. Mineral.*, 90, 273 (abs. ref. 1).