Tarkianite $(Cu,Fe)(Re,Mo)_4S_8$

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
S	26.77
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 Lukkulaisvaara 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, $(Cu,Fe)(Re,Mo)_4S_8$, a new mineral species from the Hitura mine, Nivala, Finland. Can. Mineral., 42, 539–544. (2) (2005) Amer. Mineral., 90, 273 (abs. ref. 1).