Trüstedtite $(Ni, Co)_3Se_4$

Crystal Data: Cubic. *Point Group:* $4/m\ \overline{3}\ 2/m$. As minute euhedral crystals embedded in clausthalite.

Physical Properties: Hardness = ∼2.5 VHN = n.d. D(meas.) = n.d. D(calc.) = 6.62

Optical Properties: Opaque. *Color:* Yellow. *Luster:* Metallic.

R: (400) 42.2, (420) 43.6, (440) 45.0, (460) 46.4, (480) 47.5, (500) 48.5, (520) 49.4, (540) 50.3, (560) 51.2, (580) 52.0, (600) 52.6, (620) 53.1, (640) 53.8, (660) 54.3, (680) 54.9, (700) 55.4

Cell Data: *Space Group:* $Fd3m$ (probable). $a = 9.94$ $Z = 8$

X-ray Powder Pattern: Kuusamo, Finland.
2.48 (100), 1.755 (100), 3.00 (80), 2.87 (80), 1.905 (60), 5.75 (40), 3.52 (40)

Chemistry:

	(1)	(2)
Ni	29.5	35.80
Co	6.4	
Cu	trace	
Se	64.4	64.20
S	trace	
Total	100.3	100.00

(1) Kuusamo, Finland; by X-ray fluorescence analysis; corresponds to $(Ni_{2.47}Co_{0.53})_{\Sigma=3.00}3Se_{4.00}$.
(2) Ni_3Se_4.

Polymorphism & Series: Dimorphous with wilkmanite.

Mineral Group: Linnaeite group.

Occurrence: In uranium-bearing calcite veins in sills of albite diabase in schist (Kuusamo, Finland); in stibnite-quartz-barite veins in schists (Qiongmo deposit, China).

Association: Clausthalite, penroseite, sederholmite, wilkmanite, kullerudite (Kuusamo, Finland); gold, tiemannite, clausthalite, selenian famatinite, selenian gersdorffite, antimonselite, selenian stibnite, quartz, barite (Qiongmo deposit, China).

Distribution: From Kuusamo, northeastern Finland [TL]. At the Qiongmo gold deposit, western Qinling Mountains, Shaanxi Province, China.

Name: In honor of Otto Trüstedt (1866–1929), Finnish mining engineer, whose work on prospecting methods lead to the discovery of the Outokumpu ore deposit, Finland.

Type Material: National School of Mines, Paris, France.

References: (1) Vuorelainen, Y., A. Huhma, and A. Häkli (1964) Sederholmite, wilkmanite, kullerudite, mäkinenite, and trüstedtite, five new nickel selenide minerals. Compt. Rendus Soc. Géol. Finlande, 36, 113–125. (2) (1965) Amer. Mineral., 50, 519–520 (abs. ref. 1).