

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. As elongated tabular crystals, to 0.3 mm; as grains and massive.

Physical Properties: Hardness = n.d. VHN = 360–392, average 375 (10 g load).
D(meas.) = n.d. D(calc.) = [6.25]

Optical Properties: Opaque. *Color:* Bronze-yellow. *Pleochroism:* Moderate.
Anisotropism: Weak in reflected light.

R₁–R₂: n.d.

Cell Data: *Space Group:* $P4/mmm$. $a = 7.37$ $c = 5.88$ $Z = [1]$

X-ray Powder Pattern: Oktyabr mine, Russia.
2.80 (10), 1.867 (8), 4.34 (6), 2.40 (6), 2.32 (6), 3.67 (5), 1.808 (4)

Chemistry:	(1)	(2)	(3)
Ni	43.6	45.85	43.93
Fe	0.2	0.22	
Co	0.8	0.66	
Pb		0.01	
As	0.5	0.72	
Bi	33.9	27.76	34.75
S	21.4	22.46	21.32
Total	100.4	97.68	100.00

(1) Oktyabr mine, Russia; by electron microprobe, corresponding to (Ni_{8.90}Co_{0.16}Fe_{0.04})_{Σ=9.10}(Bi_{1.94}As_{0.08})_{Σ=2.02}S_{8.00}. (2) Zimmer Lake, Canada; by electron microprobe, corresponding to (Ni_{8.92}Co_{0.13}Fe_{0.04})_{Σ=9.09}(Bi_{1.52}As_{0.11})_{Σ=1.63}S_{8.00}. (3) Ni₉Bi₂S₈.

Mineral Group: Hauchecornite group.

Occurrence: Of hydrothermal origin; as secondary pore-fillings and replacements of sandstone and conglomerate (Zimmer Lake, Canada); in ultramafic rocks (Liu Zhuang, China).

Association: Chalcocite, galena, pentlandite, altaite (Oktyabr mine, Russia); chalcopyrite, pyrrhotite, millerite (Zimmer Lake, Canada).

Distribution: In the Oktyabr mine, Talnakh area, Noril'sk region, western Siberia, Russia [TL]. From near Zimmer Lake, northern Saskatchewan, Canada. At the Mihara mine, Okayama Prefecture, and the Tsumo mine, Shimane Prefecture, Japan. In China, from Liu Zhuang, Tongbai Co., Henan Province.

Name: For the relation to hauchecornite.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 77168.

References: (1) Kovalenker, V.A., T.L. Evstigneeva, V.D. Begizov, L.N. Vyal'sov, A.V. Smirnov, Y.K. Krakovetskii, and V.S. Balbin (1978) Hauchecornite from copper-nickel ores of the Oktyabr'skoe deposit. *Trudy Min. muzeya Akad. Nauk SSSR*, 26, 201–205 (in Russian). (2) (1979) *Chem. Abs.*, 90, 158 (abs. ref. 1). (3) Just, J. (1980) Bismutohauchecornite—new name: hauchecornite redefined. *Mineral. Mag.*, 43, 873–876. (4) Watkinson, D.H., J.B. Heslop, and W.D. Ewert (1975) Nickel sulphide-arsenide assemblages associated with uranium mineralization, Zimmer Lake area, northern Saskatchewan. *Can. Mineral.*, 13, 198–204.