Lapieite $CuNiSbS_3$

Crystal Data: Orthorhombic. *Point Group:* 222. As subhedral grains, to 150 μm.

Physical Properties: *Cleavage:* Fair on $\{0kl\}$. Hardness = 4.5–5 VHN = n.d. D(meas.) = n.d. D(calc.) = 4.966

Optical Properties: Opaque. *Color:* Gray, presumably. *Luster:* Metallic. *Pleochroism:* In shades of greenish gray to gray. *Anisotropism:* Strong, with very pale blue to intense yellowish pink tints.

R_1–R_2: (400) 33.4–32.1, (420) 34.0–32.2, (440) 34.6–32.5, (460) 34.9–33.3, (480) 34.8–34.5, (500) 34.5–35.8, (520) 34.1–36.5, (540) 33.9–36.8, (560) 34.1–36.7, (580) 34.3–36.7, (600) 34.3–36.8, (620) 34.4–37.0, (640) 34.8–37.3, (660) 35.6–37.8, (680) 36.6–38.6, (700) 37.8–39.5

Cell Data: *Space Group:* $P2_12_12_1$. $a = 7.422(2)$ $b = 12.508(3)$ $c = 4.900(1)$ $Z = 4$

X-ray Powder Pattern: Lapie River, Canada.
2.959 (100), 3.178 (90), 1.837 (90), 1.855 (60), 1.601 (30), 2.769 (20), 2.637 (20)

Chemistry:

	(1)	(2)	(3)
Cu	18.5	18.45	18.68
Ni	17.1	17.17	17.26
Fe	0.1	0.14	
Sb	35.0	35.23	35.79
As	0.1	0.15	
S	27.7	28.00	28.27
Total	98.5	99.14	100.00

(1) Lapie River, Canada; by electron microprobe, average of four grains; corresponding to $Cu_{1.01}(Ni_{1.01}Fe_{0.01})_{\Sigma=1.02}(Sb_{1.00}As_{0.01})_{\Sigma=1.01}S_{3.00}$. (3) Tyrnyauz deposit, Russia; by electron microprobe, corresponding to $Cu_{1.00}(Ni_{1.00}Fe_{0.01})_{\Sigma=1.01}(Sb_{0.99}As_{0.01})_{\Sigma=1.00}S_{3.00}$. (4) $CuNiSbS_3$.

Occurrence: In a highly altered and mineralized glacial erratic (Lapie River, Canada).

Association: Nickelian pyrite, gersdorffite, polydymite, millerite, marcasite, tetrahedrite, chalcopyrite, spinel, magnetite, mica, quartz (Lapie River, Canada); zinkenite, ullmannite, chalcostibite (Tyrnyauz deposit, Russia); mückeite, millerite, bismuthinite, sphalerite, aikinite, polydymite (Grüne Au mine, Germany).

Distribution: From near the confluence of Glacier Creek and the Lapie River, St. Cyr Ranges, Yukon Territory, Canada [TL]. In the Tyrnyauz deposit, left bank of the Baksan River Valley, northern Caucasus Mountains, Russia. At the Grüne gold mine, Schutzbach, 15 km southwest of Siegen, North-Rhine-Westphalia, Germany.

Name: For the Lapie River, Canada.

Type Material: Canadian Geological Survey, Ottawa, Canada, 63844, 63845, and 63846.

References: (1) Harris, D.C., A.C. Roberts, R.I. Thorp, I.R. Jonasson, and A.J. Criddle (1984) Lapieite $CuNiSbS_3$, a new mineral species from the Yukon Territory. Can. Mineral., 22, 561–564. (2) (1985) Amer. Mineral., 70, 1329–1330 (abs. ref. 1).