Neyite $Ag_2Cu_6Pb_{25}Bi_{26}S_{68}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As masses of small intergrown crystals and grains; also as aggregates of prismatic to bladed crystals with stepped surfaces on the broad faces, to 3 mm; some prismatic aggregates are twisted and curved.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Very brittle. Hardness = 2.5 VHN = n.d. D(meas.) = 7.02 D(calc.) = 7.037

Optical Properties: Opaque. *Color:* Lead-gray, tarnishes yellow then Prussian blue; galena-white in reflected light. *Luster:* Bright metallic. *Anisotropism:* Moderate, pale gray, yellow-green, and pale reddish brown to gray-black.
R_1–R_2: (400) 41.3–44.5, (420) 41.6–44.8, (440) 41.8–45.0, (460) 42.1–45.2, (480) 42.3–45.3, (500) 42.4–45.0, (520) 42.2–45.1, (540) 41.9–44.8, (560) 41.6–44.5, (580) 41.4–44.4, (600) 41.2–44.5, (620) 41.0–44.6, (640) 40.7–44.6, (660) 40.4–44.5, (680) 40.2–44.3, (700) 39.9–44.1

Cell Data: *Space Group:* $C2/m$. $a = 37.527(6)$ $b = 4.0705(6)$ $c = 43.701(7)$ $\beta = 108.801(2)^\circ$ Z = 4

X-ray Powder Pattern: Lime Creek deposit, Canada.
3.72 (10), 3.51 (10), 2.92 (10), 2.04 (6), 2.27 (5), 2.08 (4), 1.461 (4)

Chemistry:

	(1)	(2)	(3)
Pb	41.76	37.9	38.68
Cu	2.84	2.90	2.85
Cd		0.30	
Ag	1.52	1.58	1.61
Bi	36.62	40.4	40.58
Sb		0.10	
S	15.65	16.2	16.28
Total	98.39	99.4	100.00

(1) Lime Creek deposit, Canada; corresponding to $Ag_{1.96}Cu_{6.23}Pb_{28.08}Bi_{24.42}S_{68.00}$. (2) Do.; by electron microprobe, corresponding to $Ag_{1.97}Cu_{6.14}Cd_{0.36}Pb_{24.62}Bi_{26.02}Sb_{0.11}S_{68.00}$. (3) $Ag_2Cu_6Pb_{25}Bi_{26}S_{68}$.

Occurrence: In late-forming crosscutting hydrothermal quartz veins in a quartz-molybdenite stockwork (Lime Creek deposit, Canada); in mesozonal synmetamorphic quartz veins (Johnny Lyon Hills, Arizona, USA).

Association: Pyrite, galena, sphalerite, chalcopyrite, aikinite, cosalite, tetrahedrite, nuffieldite, molybdenite (Lime Creek deposit, Canada); gold, chalcopyrite, nordströmite, quartz (Johnny Lyon Hills, Arizona, USA).

Distribution: From Patsy Creek, immediately south of the Lime Creek molybdenum deposit, Kitsault, near Alice Arm, British Columbia, Canada [TL]. In the USA, from the Johnny Lyon Hills, north of Benson, Cochise Co., Arizona; at the Alaska mine, Poughkeepsie Gulch, San Juan Co., Colorado; from the Whiskey Canyon prospect, Lewis district, Lander Co., Nevada. In the Golconda prospect, Chishawasha, near Harare, Zimbabwe. From the Vale das Gatas tungsten mine, near Vila Real, Portugal. At the Felbertal tungsten mine, Salzburg, Austria.

Name: To honor Charles Stuart Ney (1918–1975), geologist in charge of early exploration at the Lime Creek deposit.

Type Material: Canadian Geological Survey, Ottawa, Canada, 68067; National Museum of Natural History, Washington, D.C., USA, 142527.

References: (1) Drummond, A.D., J. Trotter, R.M. Thompson, and J.A. Gower (1969) Neyite, a new sulphosalt from Alice Arm, British Columbia. Can. Mineral., 10, 90–96. (2) (1970) Amer. Mineral., 55, 1444 (abs. ref. 1). (3) Makovicky, E., T. Balić-Žunić, and D. Topa (2001) The crystal structure of neyite, $Ag_2Cu_6Pb_{25}Bi_{26}S_{68}$. Can. Mineral., 39, 1365–1376. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 392.