Skippenite Bi_2Se_2Te

Crystal Data: Hexagonal. *Point Group:* $\overline{3}$ $2/m$, $3m$ or 32. Crystals flattened ∥ {0001}, to 1 mm, strongly deformed to produce lamellae, in massive aggregates.

Physical Properties: *Cleavage:* Perfect on {0001}. Hardness = n.d. VHN = 52–74, 63 average (25 g load). D(meas.) = n.d. D(calc.) = 7.94

Optical Properties: Opaque. *Color:* Steel-gray; white with a yellow tint in polished section. *Streak:* Black. *Luster:* Metallic. *Anisotropism:* Moderate, blue to bluish gray.

R_1–R_2: (400) — , (420) 41.0–43.0, (440) 44.6–46.1, (460) 46.5–47.8, (480) 47.7–48.8, (500) 48.3–49.5, (520) 48.7–50.0, (540) 49.0–50.3, (560) 49.1–50.4, (580) 49.1–50.4, (600) 49.2–50.5, (620) 49.3–50.6, (640) 49.4–50.8, (660) 49.4–50.8, (680) 49.4–50.8, (700) 49.4–50.8

Cell Data: *Space Group:* $R\overline{3}m$, $R3m$, or $R32$. $a = 4.183(4)$ $c = 29.12(8)$ $Z = 3$

X-ray Powder Pattern: Otish Mountains deposit, Canada.
3.074 (10), 2.090 (8), 2.267 (7), 4.85 (6), 3.584 (6), 9.71 (5), 2.133 (5)

Chemistry:

	(1)	(2)
Bi	60.85	59.41
Cu	0.19	
Pb	0.14	
Se	22.46	22.45
Te	15.68	18.14
S	0.58	
Total	99.90	100.00

(1) Otish Mountains deposit, Canada; by electron microprobe, average of six analyses; corresponding to $(Bi_{2.07}Cu_{0.02}Pb_{0.01})_{\Sigma=2.10}Se_{2.02}(Te_{0.87}S_{0.13})_{\Sigma=1.00}$. (2) Bi_2Se_2Te.

Mineral Group: Tetradymite group.

Occurrence: In a vein-type uranium deposit with other tellurides and selenides.

Association: Watkinsonite, součekite, clausthalite, chalcopyrite, Au–Ag alloy.

Distribution: From the Otish Mountains uranium deposit, Quebec, Canada [TL].

Name: To honor Professor George Skippen (1936–), Canadian geologist, Carleton University, Ottawa, Canada.

Type Material: n.d.

References: (1) Johan, Z., P. Picot, and F. Ruhlmann (1987) The ore mineralogy of the Otish Mountains uranium deposit, Quebec: skippenite, Bi_2Se_2Te, and watkinsonite, $Cu_2PbBi_4(Se,S)_8$, two new mineral species. Can. Mineral., 25, 625–637. (2) (1989) Amer. Mineral., 74, 947 (abs. ref. 1). (3) Nakajima, S. (1963) The crystal structure of $Bi_2Te_{3-x}Se_x$. J. Phys. Chem. Solids, 24, 479–485. [str??must]