

Crystal Data: Triclinic *Point Group:* $\bar{1}$ or 1. Anhedral grains, to 200 μm .

Physical Properties: *Cleavage:* A weak parting was observed. *Fracture:* Even, may be arcuate. *Tenacity:* Brittle. Hardness = 3–3.5 VHN = 100–115, 104 average (25 g load). D(meas.) = n.d. D(calc.) = 5.56

Optical Properties: Opaque. *Color:* Pale gray in reflected light; rare blood-red internal reflections. *Streak:* Black. *Luster:* Metallic. *Pleochroism:* Weak; greenish gray to bluish gray. *Anisotropism:* Moderate to strong; purple, purplish brown-gray, brownish yellow, greenish yellow, sage-green, bluish green, dark blue-bottle-green. *Bireflectance:* Weak to moderate.

R_1 – R_2 : (400) 35.2–41.0, (420) 35.1–40.8, (440) 34.6–40.2, (460) 33.9–39.4, (480) 33.3–39.1, (500) 32.8–39.1, (520) 32.5–39.4, (540) 32.0–39.4, (560) 31.4–39.2, (580) 30.9–38.8, (600) 30.4–38.5, (620) 30.1–37.9, (640) 29.7–36.9, (660) 29.2–35.9, (680) 28.6–35.9, (700) 28.0–34.2

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 9.012(3)$ $b = 13.223(3)$ $c = 5.906(2)$
 $\alpha = 93.27(3)^\circ$ $\beta = 95.05(4)^\circ$ $\gamma = 109.16(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Hemlo deposit, Canada.
 4.204 (100), 3.313 (60), 2.749 (40), 4.343 (30), 2.315 (30)

Chemistry:	(1)	(2)
Tl	18.3	18.31
Hg	17.5	17.97
Sb	43.4	43.62
As	1.1	
S	20.5	20.10
Total	100.8	100.00

(1) Hemlo deposit, Canada; by electron microprobe, average of five analyses; corresponds to $\text{Tl}_{0.98}\text{Hg}_{0.95}(\text{Sb}_{3.90}\text{As}_{0.17})_{\Sigma=4.07}\text{S}_{7.00}$. (2) $\text{TlHgSb}_4\text{S}_7$.

Occurrence: A very rare primary mineral found in drill core from an epithermal-hydrothermal gold deposit.

Association: Pääkkönenite, stibarsen, realgar, arsenic, chalcostibite, quartz, calcite.

Distribution: From the Golden Giant orebody, Hemlo gold deposit, 35 km east of Marathon, Ontario, Canada [TL].

Name: To honor Professor David John Vaughan (1946–), Manchester University, Manchester, England, for his contributions to ore mineralogy.

Type Material: The Natural History Museum, London, England, 1987,95, E.1220; Canadian Geological Survey, Ottawa, Canada, 65497.

References: (1) Harris, D.C., A.C. Roberts and A.J. Criddle (1989) Vaughanite, $\text{TlHgSb}_4\text{S}_7$, a new mineral from Hemlo, Ontario, Canada. *Mineral. Mag.*, 53, 79–83. (2) (1990) *Amer. Mineral.*, 75, 710–711 (abs. ref. 1).