Pääkkönenite Sb_2AsS_2

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Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. As rare crystals, to 30 μm, and in irregular grains. *Twinning:* Finely spaced polysynthetic twinning is present; synthetic crystals are twinned on {001}.

Physical Properties: *Cleavage:* In one direction. *Tenacity:* Brittle. Hardness = ∼2 VHN = 66–87, 77 average (10 g load). D(meas.) = n.d. D(calc.) = 5.21

Optical Properties: Opaque. *Color:* Dark gray; very pale gray in reflected light, with bright red internal reflections. *Streak:* Gray with a brownish tint. *Luster:* Metallic. *Pleochroism:* Weak. *Anisotropism:* Strong.

R_1–R_2: (400) — , (420) — , (440) 40.9–52.1, (460) 39.8–51.7, (480) 38.7–50.8, (500) 38.0–49.8, (520) 37.5–48.7, (540) 37.2–47.8, (560) 36.9–47.0, (580) 36.7–46.3, (600) 36.5–45.8, (620) 36.5–45.5, (640) 36.4–45.3, (660) 36.2–45.1, (680) 36.2–45.4, (700) 36.0–45.3

Cell Data: *Space Group:* $C2/m$ (synthetic). $a = 10.75(2)$ $b = 3.959(3)$ $c = 12.49(2)$ $\beta = 115.28(8)°$ Z = 4

X-ray Powder Pattern: Kalliosalo deposit, Finland.
2.87 (10), 2.68 (6), 3.90 (4), 3.13 (4), 2.27 (3), 1.750 (3), 2.08 (2)

Chemistry:

	(1)	(2)
Sb	66.9	63.65
As	18.6	19.59
S	15.5	16.76
Total	101.0	100.00

(1) Kalliosalo deposit, Finland; by electron microprobe, average of five analyses; corresponding to $Sb_{2.14}As_{0.97}S_{1.89}$. (2) Sb_2AsS_2.

Occurrence: In hydrothermal mineral deposits with other Sb–As-bearing minerals.

Association: Arsenopyrite, arsenic, löllingite, stibnite, antimony (Kalliosalo deposit, Finland); stibarsen, arsenic, stibnite, sphalerite, siderite, quartz (Příbram, Czech Republic); vaughanite, stibarsen, realgar, arsenic (Hemlo mine, Canada).

Distribution: From the Kalliosalo deposit, Seinäjoki region, Finland [TL]. At Příbram, Czech Republic. In the Hemlo gold deposit, Hemlo, Ontario, Canada.

Name: To honor Viekko Pääkkönen (1907–1980), Finnish geologist, who studied the ore deposits of the type region.

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

References: (1) Borodaev, Y.S., N.N. Mozgova, N.A. Ozerova, N.S. Bortnikov, P. Oivanen, and V. Iletuinen (1981) Pääkkönenite, Sb_2AsS_2, a new mineral from the Seinäjoki ore region in Finland. Zap. Vses. Mineral. Obshch., 110, 480–487 (in Russian). (2) (1982) Amer. Mineral., 67, 858 (abs. ref. 1). (3) Bonazzi, P., D. Borrini, F. Mazzi, and F. Olmi (1995) Crystal structure and twinning of Sb_2AsS_2, the synthetic analogue of pääkkönenite. Amer. Mineral., 80, 1054–1058. (4) Cureton, F. and B. Cureton (1994) Second occurrence of paakkonenite. Mineral. Record, 25, 386.

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