Aikinite $PbCuBiS_3$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals prismatic to acicular, to 1 m, striated ‖ [001], rarely radiating; also massive.

Physical Properties: *Cleavage:* Indistinct on {010}. *Fracture:* Uneven. Hardness = 2.0–2.5 VHN = n.d. D(meas.) = 7.07 D(calc.) = 7.255

Optical Properties: Opaque. *Color:* Blackish lead-gray, tarnishes brown or copper-red, may have a yellowish green coating; in polished section, cream-white. *Streak:* Grayish black. *Luster:* Metallic. *Pleochroism:* Cream-white to pure white or pale brown. *Anisotropism:* Distinct.
R_1–R_2: (400) 39.1–43.5, (420) 39.2–44.0, (440) 39.3–44.5, (460) 39.4–44.9, (480) 39.4–45.3, (500) 39.5–45.7, (520) 39.4–46.0, (540) 39.3–46.2, (560) 39.2–46.4, (580) 39.0–46.3, (600) 38.9–46.1, (620) 38.9–45.8, (640) 38.6–45.4, (660) 38.3–44.9, (680) 38.1–44.4, (700) 37.9–43.9

Cell Data: *Space Group: Pnma.* $a = 11.638(3)$ $b = 4.039(1)$ $c = 11.319(2)$ $Z = 4$

X-ray Powder Pattern: Beresovsk, Russia.
3.68 (100), 3.19 (80), 2.88 (70), 3.59 (60), 2.59 (50), 1.989 (40), 4.08 (30)

Chemistry:

	(1)	(2)	(3)		(1)	(2)	(3)
Pb	35.15	35.19	35.98	Bi	36.25	37.52	36.29
Cu	11.11	10.59	11.03	S	16.56	16.70	16.70
Fe		0.17		Total	99.07	100.17	100.00

(1) Beresovsk, Russia. (2) Loch Shin monzogranite, near Lairg, Scotland; by electron microprobe, average of eight analyses; corresponds to $Pb_{0.98}Cu_{0.96}Bi_{1.04}S_{3.00}$. (3) $PbCuBiS_3$.

Occurrence: Uncommon in hydrothermal veins.

Association: Gold, pyrite, galena, tennantite, bismuthinite, enargite, chalcopyrite, quartz.

Distribution: There are numerous minor localities. In Russia, from the Beresovsk district, near Yekaterinburg (Sverdlovsk), Middle Ural Mountains [TL], exceptional crystal sprays; very large crystals at Djida, Buryat, Siberia. From Dobšiná (Dobschau), Slovakia. In France, at the Gardette mine, near Bourg d'Oisans, Isère. In the USA, in Utah, at the Sells mine, Alta, Salt Lake Co.; in Nevada, near Cucomungo Spring and near the Sylvania Mountains, Esmeralda Co.; at the Old Lout mine, Poughkeepsie Gulch, near Ouray, San Juan Co., and in the Sunnyside mine, Eureka Co., Colorado; from the Chantilly quarry, near Arcola, Loudoun Co., Virginia. At Tasco and Huitzuco, Guerrero, Mexico.

Name: For Dr. Arthur Aikin (1773–1854), English chemist and mineralogist, a founder and long-time Secretary of the Geological Society of London, England.

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