

**Crystal Data:** Orthorhombic, pseudocubic. *Point Group:* *mm*2. Pseudo-octahedra, dodecahedra, cubes, or as combinations of these forms, in crystals as large as 18 cm. Also radiating crystal aggregates, botryoidal crusts, or massive. *Twinning:* Pseudospinel law {111}; repeated interpenetration twins of pseudododecahedra on {111}.

**Physical Properties:** *Fracture:* Uneven to slightly conchoidal. *Tenacity:* Brittle. Hardness = 2.5–3 VHN = n.d. D(meas.) = 6.29 D(calc.) = 6.32

**Optical Properties:** Opaque. *Color:* Steel-gray with a red tint, tarnishes black; in polished section, gray-white with a violet tint. *Streak:* Gray-black. *Luster:* Strong metallic.

*Pleochroism:* Very weak. *Anisotropism:* Weak.

R<sub>1</sub>–R<sub>2</sub>: (400) 28.9–29.5, (420) 27.9–28.5, (440) 27.1–27.7, (460) 26.3–26.9, (480) 25.8–26.3, (500) 25.3–25.8, (520) 25.0–25.4, (540) 24.7–25.2, (560) 24.6–25.0, (580) 24.5–24.9, (600) 24.4–24.9, (620) 24.5–24.8, (640) 24.6–24.9, (660) 24.5–24.9, (680) 24.6–25.0, (700) 24.7–25.0

**Cell Data:** *Space Group:* *Pna*2<sub>1</sub>. *a* = 15.149(1) *b* = 7.476(2) *c* = 10.589(1) *Z* = 4

**X-ray Powder Pattern:** Machacamarca, Bolivia.

3.02 (100), 1.863 (50), 2.66 (40), 3.14 (30), 2.44 (30), 2.03 (30), 1.784 (20)

**Chemistry:**

	(1)	(2)	(3)
Ag	75.78	74.20	76.51
Fe		0.68	
Ge	3.65	4.99	6.44
Sn	3.60	3.36	
Sb	trace	trace	
S	16.92	16.45	17.05
Total	99.95	99.68	100.00

(1) Chocaya, Bolivia. (2) Aullagas, Bolivia. (3) Ag<sub>8</sub>GeS<sub>6</sub>.

**Polymorphism & Series:** Forms a series with canfieldite.

**Occurrence:** In low-temperature polymetallic deposits with silver sulfosalts (Freiberg, Germany); in high-temperature Sn–Ag deposits (Bolivia).

**Association:** Canfieldite, stephanite, acanthite, pyrrargyrite, polybasite, aramayoite, diaphorite, marcasite, pyrite, galena, sphalerite, cassiterite, siderite.

**Distribution:** In Germany, in Saxony, from the Himmelsfürst [TL] and other mines, Erbisdorf, near Freiberg. In the Fournial mine, Massiac region, Cantal, France. At the Vale das Gatas tungsten mine, near Vila Real, northern Portugal. From Silvermines, Co. Tipperary, Ireland. At a number of localities in Bolivia, including Aullagas, Colquechaca, Potosí, Oruro, Porco, Chocaya, and Machacamarca. At the Dolly Varden mine, Alice Arm, British Columbia, Canada. From Rico, Dolores Co., Colorado, USA. In the Wolyu mine, Youngdong district, South Korea. From Shuiji, Fujian Province, and in the Baiguoyuan deposit, Hubei Province, China.

**Name:** From the Greek for *silver-containing*.

**Type Material:** Mining Academy, Freiberg, Germany, 7058.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 356–358. (2) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. *Geol. Soc. Amer. Mem.* 85, 122. (3) Eulenberger, G. (1977) Die Kristallstruktur der Tieftemperaturmodifikation von Ag<sub>8</sub>GeS<sub>6</sub> — Synthetischer Argyrodite. *Monatshefte für Chem.*, 108, 901–913 (in German with English abs.). (4) Wang, N. (1978) New data for Ag<sub>8</sub>SnS<sub>6</sub> (canfieldite) and Ag<sub>8</sub>GeS<sub>6</sub> (argyrodite). *Neues Jahrb. Mineral., Monatsh.*, 269–272. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 19.

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