

Crystal Data: Orthorhombic. *Point Group:* $mm2$. Crystals equant, short prismatic [001], tabular on {001}, to 20 mm; multiple striations common on {110}. *Twinning:* On {110}, very common; polysynthetic twinning observed in polished section.

Physical Properties: *Cleavage:* Very poor on {001}, {100}, and {010}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 2.5–3 VHN = 168–181 (100 g load). D(meas.) = 5.38 D(calc.) = 5.41

Optical Properties: Opaque. *Color:* Dark lead-gray to black; in polished section, rose-white. *Streak:* Chocolate-brown to purple-black. *Luster:* Metallic. *Anisotropism:* Strong. R_1 – R_2 : (400) 34.8–36.0, (420) 34.6–35.6, (440) 34.2–35.3, (460) 33.9–35.1, (480) 33.5–35.0, (500) 33.0–34.7, (520) 32.6–34.4, (540) 32.3–34.0, (560) 32.1–33.7, (580) 31.8–33.3, (600) 31.4–32.8, (620) 31.0–32.4, (640) 30.5–32.0, (660) 29.9–31.4, (680) 29.4–31.0, (700) 29.0–30.6

Cell Data: *Space Group:* $Pn2_1m$. $a = 8.076(2)$ $b = 8.737(5)$ $c = 7.634(3)$ $Z = 4$

X-ray Powder Pattern: Binntal, Switzerland.
2.72 (100), 3.85 (80), 1.749 (70), 5.72 (60), 2.56 (50), 1.914 (50), 1.414 (50)

Chemistry:	(1)	(2)	(3)	(1)	(2)	(3)
Pb	46.34	48.5	46.89	Fe	0.06	
Cu	13.09	15.2	14.38	As	16.88	13.5
Ag	0.11			Sb	0.64	1.6
Zn	0.27			S	21.73	20.6
				Total	99.12	99.4
						100.00

(1) Binntal, Switzerland; corresponds to $Pb_{0.99}Cu_{0.91}(As_{1.00}Sb_{0.02})_{\Sigma=1.02}S_{3.00}$. (2) Do.; by electron microprobe, corresponds to $Pb_{1.09}Cu_{1.12}(As_{0.84}Sb_{0.06})_{\Sigma=0.90}S_{3.00}$. (3) PbCuAsS₃.

Polymorphism & Series: Forms a series with bournonite.

Occurrence: In cavities in dolostone (Binntal, Switzerland).

Association: Tennantite, sphalerite, pyrite, dufrénoysite, rathite, baumhauerite (Binntal, Switzerland); tennantite, jordanite, dufrénoysite (Bleikvassli deposit, Norway).

Distribution: From the Lengenbach quarry, Binntal, Valais, Switzerland [TL]. At Mooseck, near Golling, Salzburg, Austria. From Sulitjelma and in the Bleikvassli Zn–Pb–Cu deposit, northern Norway. At the Aghios Philippos Pb–Zn deposit, near Kirki, Greece. In the USA, from Bingham, Tooele Co., Utah; at Butte, Silver Bow Co., Montana; and in the Balmat-Edwards mine, Balmat, St. Lawrence Co., New York. From the Whisky Creek group of mines, near Woodcock, British Columbia, and in the Hemlo gold deposit, Thunder Bay district, Ontario, Canada. At the Noche Buena mine, Mazapil, Zacatecas, Mexico. From Cerro de Pasco, Peru. In the Desierto mine, near Iquique, Tarapacá, Chile. From Tsumeb, Namibia. At the Pb–Zn deposit, Yanbian, Sichuan Province, China. From Broken Hill, New South Wales, Australia. A few additional localities are known.

Name: Honors Gustav Seligmann (1849–1920), a mineral collector of Koblenz, Germany.

Type Material: Museum of Natural History, Fribourg, Switzerland, B618.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 411–412. (2) Edenharter, A., W. Nowacki, and Y. Takéuchi (1970) I. Verfeinerung der Kristallstruktur von Bournonit $[(SbS_3)_2|Cu_2^{IV}Pb^{VII}Pb^{VIII}]$ und von Seligmannit $[(AsS_3)_2|Cu_2^{IV}Pb^{VII}Pb^{VIII}]$. Zeits. Krist., 131, 397–417 (in German with English abs.). (3) Bakakin, V.V. and A.A. Godovikov (1980) Crystal structure and twinning of seligmannite and bournonite. Doklady Acad. Nauk SSSR, 215, 345–347 (in Russian). (4) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. Geol. Soc. Amer. Mem. 85, 172. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 505.

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