

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals commonly equant, {100}, {001}, {111}, {11 $\bar{1}$ }, and a dozen other forms; also tabular on {100}, to 3 mm; pseudohexagonal.

Physical Properties: *Cleavage:* Perfect on {100}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 1.5–2 VHN = n.d. D(meas.) = 4.88 D(calc.) = 4.926

Optical Properties: Transparent; becoming opaque on exposure to light, then translucent in thin splinters. *Color:* Scarlet, vermilion, pink; becoming red-orange on exposure to light. *Streak:* Vermilion. *Luster:* Adamantine.

Optical Class: Biaxial (-). *Pleochroism:* Slight in transmitted light. *Orientation:* $Y = b; Z \wedge c = 6.5^\circ$. *Dispersion:* Strong. $n = 3.27(9)$ $2V(\text{meas.}) = \sim 65^\circ$

R_1 – R_2 : (400) 40.7–44.0, (420) 40.0–43.2, (440) 39.3–42.4, (460) 38.7–41.5, (480) 37.9–40.4, (500) 37.0–39.2, (520) 36.0–38.0, (540) 35.0–36.6, (560) 33.8–35.4, (580) 32.7–34.7, (600) 32.0–34.0, (620) 31.4–33.4, (640) 31.0–32.9, (660) 30.6–32.4, (680) 30.4–31.8, (700) 30.1–31.4

Cell Data: *Space Group:* $A2/a$. $a = 17.23$ $b = 7.78$ $c = 15.19$ $\beta = 101^\circ 12'$ $Z = 24$

X-ray Powder Pattern: Synthetic.

2.82 (100), 3.21 (80), 2.72 (60), 1.953 (50), 1.701 (40), 1.661 (40), 1.608 (40)

Chemistry:

| | (1) | (2) |
|-------|------|--------|
| Ag | 43.9 | 43.69 |
| As | 28.9 | 30.34 |
| Sb | 0.4 | |
| S | 26.0 | 25.97 |
| Total | 99.2 | 100.00 |

(1) Binntal, Switzerland. (2) AgAsS₂.

Polymorphism & Series: Dimorphous with trechmannite.

Occurrence: Of hydrothermal origin with other Ag–As sulfides.

Association: Sphalerite, pyrite, realgar, orpiment, hutchinsonite, sartorite, rathite (Binntal, Switzerland); chabournéite, pierrotite, parapierrrotite, stibnite, pyrite, sphalerite, twinnite, zinkenite, madocite, andorite, laffittite, routhierite, aktashite, wakabayashilite, realgar, orpiment (Jas Roux, France); proustite, gersdorffite, argentian miargyrite (Silvermines, Ireland).

Distribution: From the Lengenbach quarry, Binntal, Valais, Switzerland [TL]. At the Jas Roux deposit, 10 km east of Chapelle-en-Valgaudemar, Hautes-Alpes, France. From Wiesloch, Black Forest, Germany. At Silvermines, Co. Tipperary, Ireland.

Name: In honor of George Frederick Herbert Smith (1872–1953), crystallographer of the British Museum (Natural History), London, England.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 430–432. (2) Hellner, E. and H. Burzlaff (1964) Die Struktur des Smithits AgAsS₂. Naturwiss., 51, 35–36 (in German). (3) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. Geol. Soc. Amer. Mem. 85, 142–143.