

**Stannoidite****Cu<sub>8</sub>(Fe, Zn)<sub>3</sub>Sn<sub>2</sub>S<sub>12</sub>**

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**Crystal Data:** Orthorhombic. *Point Group:* 222. Massive, in veinlets, to 1 mm.**Physical Properties:** *Fracture:* Uneven to subconchoidal. Hardness = ~4 VHN = 181–274 (100 g load). D(meas.) = n.d. D(calc.) = [4.68]**Optical Properties:** Opaque. *Color:* Brass-brown; in polished section, pinkish brown. *Streak:* Dark brown-gray. *Luster:* Metallic. *Pleochroism:* Distinct, pale salmon-brown to brown. *Anisotropism:* Strong; dark orange-red to yellow-gray. R<sub>1</sub>–R<sub>2</sub>: (400) 17.5–18.9, (420) 17.4–19.2, (440) 18.2–20.3, (460) 19.5–21.7, (480) 20.8–23.0, (500) 21.8–24.2, (520) 22.8–25.3, (540) 23.7–26.3, (560) 24.6–27.1, (580) 25.4–27.8, (600) 26.2–28.4, (620) 27.1–29.1, (640) 27.8–29.5, (660) 28.7–30.0, (680) 29.6–30.5, (700) 30.3–30.8**Cell Data:** *Space Group:* I222. *a* = 10.767 *b* = 5.411 *c* = 16.118 *Z* = [2]**X-ray Powder Pattern:** Konjo mine, Japan. 3.11 (100), 1.906 (70), 1.621 (20b), 2.70 (16), 4.83 (10), 5.40 (5), 4.13 (4)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)
Cu	37.2	38.2	Zn	1.2
Ag	0.1		Sn	16.5
Fe	12.5	11.9	S	31.2
			<b>Total</b>	<b>98.7</b>
				<b>99.5</b>

(1) Konjo mine, Japan; by electron microprobe, corresponding to (Cu<sub>7.22</sub>Ag<sub>0.01</sub>)<sub>Σ=7.23</sub>(Fe<sub>2.76</sub>Zn<sub>0.23</sub>)<sub>Σ=2.99</sub>Sn<sub>1.71</sub>S<sub>12.00</sub>. (2) Vila Apacheta, Bolivia; by electron microprobe, corresponding to Cu<sub>7.74</sub>(Fe<sub>2.74</sub>Zn<sub>0.16</sub>)<sub>Σ=2.90</sub>Sn<sub>2.03</sub>S<sub>12.00</sub>.**Occurrence:** In hydrothermal Sn–Cu sulfide deposits.**Association:** Chalcopyrite, galena, tetrahedrite, stannite, cassiterite, siderite, quartz (Konjo mine, Japan); hemusite, enargite, luzonite, colusite, reniérite, tennantite, chalcopyrite, pyrite (Chelopech, Bulgaria).**Distribution:** In Japan, at the Konjo mine, Okayama Prefecture [TL]; the Fukoku mine, Kyoto Prefecture; and in Hyogo Prefecture, at the Ikuno mine, Kanagase; Akenobe mine, Yabu; and elsewhere. In Australia, at Tingha, New South Wales. From St. Michael's Mount, Marazion, Cornwall, England. At the Chelopech deposit, Sofia, Bulgaria. From Vaultry, Haute-Vienne; Montebrias, Creuse; and Chizeuil, Saône-et-Loire, France. In the Barquilla deposit, Salamanca Province, Spain. From Långban, Värmland, Sweden. In Russia, at the Tyrnyauz W–Mo deposit, left bank of the Baksan River Valley, northern Caucasus Mountains, and from the Nevskoye W–Sn deposit, 25 km northwest of Omsukchan, Magadan region. In the Campbell mine, Bisbee, Cochise Co., Arizona, and at Butte, Silver Bow Co., Montana, USA. From the Maggie porphyry copper deposit, 15 km north of Ashcroft, British Columbia, Canada. From Bolivia, at Vila Apacheta. In Peru, from the Colquijirca mine, Junín.**Name:** For its physical and chemical similarity to stannite.**Type Material:** Geological Institute, University of Tokyo, Tokyo; National Science Museum, Tokyo, Japan, M16183; National School of Mines, Paris, France; National Museum of Natural History, Washington, D.C., USA, 121005.**References:** (1) Kato, A. (1969) Stannoidite, Cu<sub>5</sub>(Fe, Zn)<sub>2</sub>SnS<sub>8</sub>, a new stannite-like mineral from the Konjo mine, Okayama Prefecture, Japan. Bull. Nat. Sci. Mus. Tokyo, 12, 165–172. (2) (1969) Amer. Mineral., 54, 1495 (abs. ref. 1). (3) Springer, G. (1968) Electronprobe analyses of stannite and related tin minerals. Mineral. Mag., 36, 1045–1051. (4) Yamanaka, T. and A. Kato (1976) Mössbauer effect study of <sup>57</sup>Fe and <sup>119</sup>Sn in stannite, stannoidite, and mawsonite. Amer. Mineral., 61, 260–265. (5) Kudoh, Y. and Y. Takéuchi (1976) The superstructure of stannoidite. Zeits. Krist., 144, 145–160. (6) Shimizu, M. and N. Shikazono (1987) Stannoidite-bearing tin ore: mineralogy, texture and physicochemical environment of formation. Can. Mineral., 25, 229–236. (7) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 533.

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