## Kuramite $Cu_3SnS_4$



**Crystal Data:** Tetragonal. *Point Group:* $\bar{4}2m$. As minute inclusions, to 80 $\mu$m, aggregated with goldfieldite in round to elongated grains.

**Physical Properties:** Hardness = n.d. VHN = 322–373, 353 average (100 g load). D(meas.) = n.d. D(calc.) = 4.56

**Optical Properties:** Opaque. *Color:* In polished section, neutral gray. *Streak:* Metallic. *Anisotropism:* Distinct, in shades of brown.

$R_1$–$R_2$: (400) 21.0–21.6, (420) 21.4–22.1, (440) 21.9–22.9, (460) 22.5–23.8, (480) 23.0–24.5, (500) 23.5–25.1, (520) 23.9–25.5, (540) 24.4–25.9, (560) 24.9–26.2, (580) 25.4–26.6, (600) 25.8–26.8, (620) 26.2–27.0, (640) 26.5–27.2, (660) 26.9–27.3, (680) 27.3–27.5, (700) 27.7–27.7

**Cell Data:** *Space Group:* $I\bar{4}2m$. $a = 5.445(5)$ $c = 10.75(2)$ $Z = 2$

**X-ray Powder Pattern:** Kochbulak deposit, Uzbekistan.
3.13 (10), 1.914 (8), 1.640 (6), 1.108 (4), 1.244 (3), 2.70 (2), 1.044 (2)

**Chemistry:**

| | (1) | (2) | (3) |
|---|---|---|---|
| Cu | 37.27 | 38.3 | 43.56 |
| Fe | 2.36 | 5.6 | |
| Zn | 1.88 | 0.7 | |
| Sn | 30.12 | 26.7 | 27.13 |
| In | 0.32 | | |
| S | 27.86 | 28.6 | 29.31 |
| Total | 99.81 | 99.9 | 100.00 |

(1) Kochbulak deposit, Uzbekistan; by electron microprobe, average of five analyses; corresponds to $(Cu_{2.70}Fe_{0.20}Zn_{0.13})_{\Sigma=3.03}(Sn_{1.17}In_{0.01})_{\Sigma=1.18}S_{4.00}$. (2) Gunheath china clay pit, England; by electron microprobe, corresponds to $(Cu_{2.70}Fe_{0.45}Zn_{0.05})_{\Sigma=3.20}Sn_{1.01}S_{4.00}$. (3) $Cu_3SnS_4$.

**Mineral Group:** Stannite group.

**Occurrence:** In gold–sulfide–quartz veins, as inclusions in goldfieldite (Kochbulak deposit, Uzbekistan).

**Association:** Goldfieldite, famatinite, hessite, petzite, sylvanite, altaite, gold, chalcostibite, emplectite, mohite, mawsonite, cassiterite (Kochbulak deposit, Uzbekistan).

**Distribution:** From the Kochbulak gold deposit, Chatkal-Kuramin Mountains, eastern Uzbekistan [TL]. In the USA, at Bisbee, Cochise Co., Arizona; from the Zuni mine, near Silverton, San Juan Co., Colorado; in the Gold Crater district, Nye Co., Nevada. From the Gunheath china clay pit, St. Austell, Cornwall, England.

**Name:** For the occurrence in the Kuramin Mountains, Uzbekistan.

**Type Material:** Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 80176.

**References:** (1) Kovalenker, V.A., T.L. Evstigneeva, N.V. Traneva, and L.N. Vyal'sov (1979) Kuramite, $Cu_3SnS_4$, a new mineral of the stannite group. Zap. Vses. Mineral. Obshch., 108, 564–569 (in Russian). (2) (1980) Amer. Mineral., 65, 1067 (abs. ref. 1). (3) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 306.