

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As slender platy or box-shaped skeletal crystals (usually striated along the elongation), to 400  $\mu$ m, and as chaotic aggregates.

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Very brittle. Hardness = n.d. VHN = 129 (10 g load). D(meas.) = n.d. D(calc.) = 6.578

**Optical Properties:** Opaque. *Color:* Dark gray with a reddish tint; white with a slight yellow hue in reflected light, without internal reflections. *Streak:* Black. *Luster:* Metallic. *Optical Class:* Uniaxial (+). *Birefractance:* Weak to distinct. *Anisotropism:* Strong. R<sub>1</sub>-R<sub>2</sub>: (470) 29.6-36.4, (546) 32.4-38.8, (589) 31.8-38.2, (650) 31.4-37.7

**Cell Data:** *Space Group:* C 2/m. *a* = 13.095(1) *b* = 4.0032(3) *c* = 14.711(1)  $\beta$  = 115.59(1)° *Z* = 4

**X-ray Powder Pattern:** Kudriavy volcano, Iturup Island, Kurile arc, Russia. 2.809 (100), 3.715 (97), 3.632 (95), 3.520 (83), 2.948 (83), 1.914 (40), 2.346 (39)

| Chemistry: | (1)   | (2)    |
|------------|-------|--------|
| Cd         | 8.25  | 17.07  |
| Pb         | 13.10 |        |
| Fe         | 0.17  |        |
| Mn         | 0.26  |        |
| Bi         | 55.37 | 63.46  |
| In         | 2.80  |        |
| Tl         | 0.02  |        |
| S          | 17.70 | 19.47  |
| Se         | 2.23  |        |
| Cl         | 0.02  |        |
| Total      | 99.71 | 100.00 |

(1) Kudriavy volcano, Iturup Island, Kurile arc, Russia; average of 9 electron microprobe analyses, corresponding to (Cd<sub>0.51</sub>Pb<sub>0.44</sub>Fe<sub>0.02</sub>Mn<sub>0.03</sub>) $\Sigma$ =1.00(Bi<sub>1.83</sub>In<sub>0.17</sub>) $\Sigma$ =2.00(S<sub>3.81</sub>Se<sub>0.19</sub>) $\Sigma$ =4.00. (2) CdBi<sub>2</sub>S<sub>4</sub>.

**Occurrence:** As high-temperature (~ 400 °C) fumarole encrustations on the inner wall of an active andesitic stratovolcanic crater.

**Association:** Cannizzarite, greenockite, pyrite, sulfur.

**Distribution:** Kudriavy volcano, Iturup Island, Kurile arc, Russia.

**Name:** For the volcano from which the first specimens were collected.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (3112/1).

**References:** (1) Chaplygin, I.V., N.N. Mozgova, L.O. Magazina, O.Yu. Kuznetsova, Y.G. Safonov, I.A. Bryzgalov, E. Makovicky, and T. Balić-Zunić (2005) Kudriavite, (Cd,Pb)Bi<sub>2</sub>S<sub>4</sub>, a new mineral species from Kudriavy volcano, Iturup Island, Kurile arc, Russia. *Can. Mineral.*, 43, 695-701. (2) (2005) *Amer. Mineral.*, 90, 1946-1947 (abs. ref. 1). (3) Balić-Zunić T. and E. Makovicky (2007) The crystal structure of kudriavite, (Cd,Pb)Bi<sub>2</sub>S<sub>4</sub>. *Can. Mineral.*, 45, 437-443.