

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As prismatic crystals, to 2 mm, striated perpendicular to elongation.

**Physical Properties:** *Cleavage:* {001}, perfect. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 5.5 D(meas.) = 7.56 D(calc.) = [7.66]

**Optical Properties:** Semitransparent. *Color:* Black; brown in transmitted light.

*Streak:* Brown to pale yellow. *Luster:* Submetallic.

*Optical Class:* Biaxial (+). *Orientation:*  $X = a$ ;  $Y = c$ ;  $Z = b$ .  $\alpha = 2.38$   $\beta = 2.42$   $\gamma = 2.47$

2V(meas.) = n.d. 2V(calc.) = 85°

**Cell Data:** *Space Group:*  $Pcnn$ .  $a = 4.992(3)$   $b = 11.731(3)$   $c = 5.677(5)$   $Z = 4$

**X-ray Powder Pattern:** Danburitovaya mine, Russia.

3.164 (100), 2.934 (90), 1.734 (80), 2.842 (45), 2.495 (45), 1.769 (45), 1.899 (40)

**Chemistry:**

|                                | (1)   |
|--------------------------------|-------|
| Nb <sub>2</sub> O <sub>5</sub> | 27.03 |
| Ta <sub>2</sub> O <sub>5</sub> | 11.67 |
| TiO <sub>2</sub>               | 0.06  |
| SnO <sub>2</sub>               | 0.08  |
| Bi <sub>2</sub> O <sub>3</sub> | 59.85 |
| Sb <sub>2</sub> O <sub>3</sub> | 0.28  |
| PbO                            | 0.13  |
| Total                          | 99.10 |

(1) Danburitovaya mine, Russia; by electron microprobe, corresponding to (Bi<sub>0.99</sub>Sb<sub>0.01</sub>)<sub>Σ=1.00</sub> (Nb<sub>0.79</sub>Ta<sub>0.21</sub>)<sub>Σ=1.00</sub>O<sub>4</sub>.

**Occurrence:** In a pegmatite.

**Association:** Elbaite, bismuth-rich microlite, cassiterite, danburite, quartz.

**Distribution:** In the Danburitovaya mine, Malkhan Range, central Transbaikal, Russia.

**Name:** For BISMuth in its composition and relation to minerals of the *columbite–tantanite* series.

**Type Material:** Mining Institute, St. Petersburg, 2075/1; Il'menskii Preserve Museum, Miass, 3604, 3619; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p767/1.

**References:** (1) Peretazhko, I.S., V.E. Zagorskiy, A.N. Sapozhnikov, Y.D. Bobrov, and A.D. Rakcheev (1992) Bismutocolumbite Bi(Nb, Ta)O<sub>4</sub> – a new mineral from miarolitic pegmatites. Zap. Vses. Mineral. Obshch., 121(3), 130–134 (in Russian). (2) (1994) Amer. Mineral., 79, 570 (abs. ref. 1). (3) (1994) Mineral. Abs., 45, 111 (abs. ref. 1).