Bismutocolumbite $\qquad$ $Bi(Nb, Ta)O_4$

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_2O_5	27.03
Ta_2O_5	11.67
TiO_2	0.06
SnO_2	0.08
Bi_2O_3	59.85
Sb_2O_3	0.28
PbO	0.13
Total	99.10

(1) Danburitovaya mine, Russia; by electron microprobe, corresponding to $(Bi_{0.99}Sb_{0.01})_{\Sigma=1.00}$ $(Nb_{0.79}Ta_{0.21})_{\Sigma=1.00}O_4$.

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–tantalite* 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 $Bi(Nb, Ta)O_4$ – 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).