Bismutotantalite $Bi(Ta,Nb)O_4$

Crystal Data: Orthorhombic; may be metamict. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. As stout crystals, prismatic [001], to 10 cm, commonly irregular or misshapen.

Physical Properties: *Cleavage:* Partings or cleavages on {010}, good; {101}, {100}, distinct. *Fracture:* Subconchoidal. Hardness = 5–5.5 D(meas.) = 8.15–8.89 D(calc.) = 8.73–8.98

Optical Properties: Opaque, transparent in very thin fragments. *Color:* Pale brown to pitch-black; pale smoke-gray to colorless in transmitted light. *Streak:* Yellow, yellow-brown to black. *Luster:* Adamantine to submetallic.
Optical Class: Biaxial (+); isotropic when metamict. *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r < v$. $\alpha = 2.388$–2.395 $\beta = 2.403$–2.408 $\gamma = 2.426$–2.428 2V(meas.) = 80°

Cell Data: *Space Group:* $Pcmn$ or $Pcn2_1$. a = 4.97–5.00 $b = 11.80$–11.89 $c = 5.66$–5.69 Z = 4

X-ray Powder Pattern: Acari, Brazil.
3.148 (10), 2.945 (6), 3.555 (3), 1.735 (3), 1.270 (3), 2.819 (2), 2.743 (2)

Chemistry:

	(1)	(2)	(3)	(4)
Nb_2O_5	6.63	1.26	5.6	
Ta_2O_5	40.12	46.45	42.1	48.67
SiO_2		0.16		
Fe_2O_3	0.11	0.94		
Bi_2O_3	52.26	48.98	49.4	51.33
Sb_2O_3	0.04	1.76	1.2	
ZnO		0.38		
MnO	0.12	0.11		
LOI	0.33	0.62		
Total	99.61	100.66		100.00

(1) Gamba Hill, Uganda; contains additionally U_3O_8 0.06%. (2) Acari, Brazil. (3) Muiâne mines, Mozambique; partial analysis by XRF and electron microprobe. (4) $BiTaO_4$.

Occurrence: In granite pegmatite (Uganda and Mozambique); as stream-rounded pebbles (Acari, Brazil).

Association: Muscovite, schorl, cassiterite (Gamba Hill, Uganda).

Distribution: On Gamba Hill, near Kambala, southwest Uganda. In the Muiâne pegmatite, Alto Ligonha district, Mozambique. At Analamisakana, Madagascar. In Brazil, in Rio Grande do Norte, from Acari, near Picuí, Campina Grande, at Carnauba dos Dantas, Saco do Onca, at Parelhas, near Recife, and at Currais Novos; in the Baldino mine, Junco, Paraíba. In Japan, at Nagatareyama, Fukuoka Prefecture. From an undisclosed locality [Kjoktogoi] in the Altai Mountains, Sinkiang Uighur Autonomous Province, China.

Name: For BISMuth in its composition, and relation to *tantalite*.

Type Material: The Natural History Museum, London, England, 1929,160; National Museum of Natural History, Washington, D.C., USA, 96044.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 769–770. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 442–445. (3) Hurlbut, C.S., Jr. (1957) Bismutotantalite from Brazil. Amer. Mineral., 42, 178–183. (4) von Knorring, O. and A. Fadipe (1981) On the mineralogy and geochemistry of niobium and tantalum in some granite pegmatites and alkali granites of Africa. Bull. Minéral., 104, 496–507.