Béhierite $(Ta, Nb)BO_4$

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. Crystals are pseudo-octahedral {011}, to 7 mm; may be intergrown with schiavinatoite.

Physical Properties: *Cleavage:* On {110} and {010}, distinct. *Fracture:* Subconchoidal. Hardness = 7–7.5 D(meas.) = 7.86(5) D(calc.) = 7.91

Optical Properties: Translucent. *Color:* Grayish pink. *Streak:* White.
Luster: Adamantine.
Optical Class: Uniaxial (+), high birefringence. $\omega = > 2.00$ $\epsilon = > 2.00$

Cell Data: *Space Group:* $I4_1/amd$. $a = 6.206(5)$ $c = 5.472(5)$ $Z = 4$

X-ray Powder Pattern: Manjaka, Madagascar; very close to schiavinatoite.
4.10 (100), 3.10 (71), 2.327 (71), 2.478 (50), 1.600 (50), 1.939 (35)

Chemistry:

	(1)	(2)
B_2O_3	[15.77]	16.44
Nb_2O_5	21.73	31.38
Ta_2O_5	63.95	52.18
Total	[101.45]	100.00

(1) Antsongombato, Madagascar; by electron microprobe, B_2O_3 calculated from stoichiometry; corresponds to $(Ta_{0.64}Nb_{0.36})_{\Sigma=1.00}BO_4$. The original X-ray fluorescence analysis of type material from Manjaka, Madagascar is stated to have shown Ta:Nb:Zr = 18:1:0.4. (2) $(Ta, Nb)BO_4$ with Ta:Nb = 1:1.

Occurrence: Very rare, in granite pegmatites.

Association: Elbaite, pollucite, manganoan apatite, lepidolite, quartz, albite (Manjaka, Madagascar); schiavinatoite, rhodizite, elbaite–liddicoatite, quartz, feldspar (Antsongombato, Madagascar).

Distribution: From Manjaka and Antsongombato, south of Betafo, Madagascar. In the Animikie Red Ace pegmatite, near Pine River, Florence Co., Wisconsin, USA.

Name: To honor Jean Béhier (1903–1965), French mineralogist, Geological Survey of Madagascar, who discovered the mineral.

Type Material: National Museum of Natural History, Washington, D.C., USA, 139602.

References: (1) Mrose, M.E. and H.J. Rose (1962) Behierite $(Ta, Nb)BO_4$, a new mineral from Manjaka, Madagascar. Geol. Soc. Amer., Annual Meeting Abs. with Prog., 235 (abs.). (2) (1962) Amer. Mineral., 47, 414 (abs. ref. 1). (3) Demartin, F., V. Diella, C.M. Gramaccioli, and F. Pezzotta (2001) Schiavinatoite, $(Nb, Tb)BO_4$, the Nb analogue of behierite. Eur. J. Mineral., 13, 159–165.