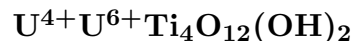


Orthobrannerite



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Crystal Data: Orthorhombic; metamict. *Point Group:* n.d. As prismatic crystals, to 1.2 cm, showing {001}, {120}, {021}, {110}, {140}, rarely {210}, {180}, striated || [001].

Physical Properties: *Fracture:* Conchoidal. Hardness = n.d. VHN = 515–532 (100–250 g load). D(meas.) = 5.46 D(calc.) = 5.46 Strongly radioactive.

Optical Properties: Semitransparent. *Color:* Black; in reflected light, grayish white with reddish brown internal reflections. *Streak:* Dark brown to black. *Luster:* Adamantine.

Optical Class: Isotropic. $n = 2.328$

R: 15–17

Cell Data: *Space Group:* n.d. $a = 7.37$ $b = 11.67$ $c = 6.33$ $Z = 2$

X-ray Powder Pattern: China; after heating at 1000 °C.

3.17 (10), 2.45 (9), 1.659 (9), 3.89 (8), 4.87 (7), 1.203 (6), 2.29 (5)

Chemistry:	(1)	(2)		(1)	(2)
UO ₃	31.08	32.01	RE ₂ O ₃	0.28	
Nb ₂ O ₅	0.19		Fe ₂ O ₃	0.40	
Ta ₂ O ₅	0.01		PbO	0.17	
SiO ₂	0.65		CaO	0.44	
TiO ₂	35.35	35.75	H ₂ O ⁺	1.11	2.02
ThO ₂	1.03		H ₂ O ⁻	0.76	
UO ₂	28.75	30.22	<hr/>		
			Total	100.22	100.00

(1) China; corresponds to $(\text{U}_{0.48}^{6+}\text{U}_{0.47}^{4+}\text{Ca}_{0.04}\text{Th}_{0.02}\text{RE}_{0.01})_{\Sigma=1.02}(\text{Ti}_{1.97}\text{Fe}_{0.02}\text{Nb}_{0.01})_{\Sigma=2.00}\text{O}_{6.01}(\text{OH})_{0.93}$. (2) $\text{U}^{4+}\text{U}^{6+}\text{Ti}_4\text{O}_{12}(\text{OH})_2$.

Polymorphism & Series: Dimorphous with brannerite (?).

Occurrence: In weathered biotite pyroxene syenite (Yunan, China); in an alkalic lamprophyre (Szechwan, China).

Association: n.d.

Distribution: From undefined localities in Yunan and Szechwan Provinces, China.

Name: As an ORTHOrhombic dimorph of *brannerite*.

Type Material: n.d.

References: (1) X-ray Laboratory, Peking Institute of Uranium Geology and X-ray Laboratory, Wuhan Geological College (1978) Orthobrannerite – a new mineral of the brannerite group. Acta Geol. Sinica, 52(3), 241–251 (in Chinese with English abs.). (2) (1979) Amer. Mineral., 64, 656 (abs. ref. 1).