

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Commonly in short to long prismatic crystals, elongated along [010], to 7 cm, may be equant, flattened on {001}, with {hk0} striated || [010], terminated by {0kl}; typically, in radiating sheaves.

Physical Properties: *Cleavage:* {102}, distinct. *Fracture:* Uneven to subconchoidal. Hardness = 6
D(meas.) = 4.33-4.39 D(calc.) = 4.39

Optical Properties: Opaque, transparent in thin fragments. *Color:* Dark reddish brown, brownish black, black; in transmitted light, yellowish brown or reddish brown. *Streak:* Reddish brown to ocher-yellow. *Luster:* Metallic adamantine, may be tarnished iridescent, greasy on fractures. *Optical Class:* Biaxial (+). $\alpha = 2.35\text{-}2.38$ $\beta = 2.36\text{-}2.39$ $\gamma = 2.38\text{-}2.42$ $2V(\text{meas.}) = \sim 50^\circ$
Pleochroism: In browns. *Orientation:* $Y = a; Z = c; X \wedge a = 26^\circ$. *Dispersion:* $r < v$.
Absorption: $X < Y > Z$.

$R_1\text{-}R_2$: (400) 22.8-24.0, (420) 21.9-23.1, (440) 21.2-22.3, (460) 20.5-21.4, (480) 19.8-20.7, (500) 19.4-20.4, (520) 19.0-19.9, (540) 18.5-19.3, (560) 18.1-18.8, (580) 17.8-18.5, (600) 17.5-18.1, (620) 17.3-17.9, (640) 17.1-17.7, (660) 17.0-17.6, (680) 16.8-17.4, (700) 16.7-17.3

Cell Data: *Space Group:* $Bbmm$. $a = 9.7965(25)$ $b = 9.9805(25)$ $c = 3.7301(1)$ $Z = 4$ (synthetic)

X-ray Powder Pattern: Synthetic Fe_2TiO_5 . (ICDD 41-1432).

3.486 (100), 2.752 (77), 4.901 (42), 2.458 (23), 1.8657 (23), 2.407 (22), 1.9733 (22)

Chemistry:	(1)	(2)	(3)
TiO ₂	41.93	38.8	33.34
Fe ₂ O ₃	57.08	61.8	66.66
MgO	0.99	0.3	
Total	[100.00]	100.9	100.00

(1) Aranyer Berg, Romania; recalculated to 100% after deduction of SiO₂ 1.29%. (2) Cuchillo, New Mexico, USA; by electron microprobe, total Fe as Fe₂O₃. (3) Fe₂TiO₅.

Occurrence: Typically, formed by pneumatolytic processes in titanium-rich andesite, rhyolite, basalt, etc., and by reactions with xenoliths within these; in lithophysae. Rarely in plutonic rocks.

Association: Hematite, magnetite, bixbyite, ilmenite, enstatite-ferrosilite, tridymite, quartz, sanidine, topaz, spessartine, beryl, mica, cassiterite, apatite.

Distribution: Many of the localities following are minor; others are known. On Măgura Uroiului (Aranyer Berg), near Piski, Romania. In Germany, near Mayen, Eifel district. From Riveau Grande, Mt. Dore, Puy-de-Dôme, France. At Vesuvius, Campania, Italy. From Jumilla, Murcia Province, Spain. On Fayal and San Miguel Islands, Azores. On Kilimanjaro, Tanzania. From Réunion Island, Indian Ocean. In the USA, fine crystals from the Thomas Range, Juab Co., Utah; at Crater Lake, West Klamath Co., and Lemolo Lake, Douglas Co., Oregon; at a number of places in the Black Range, Sierra Co., New Mexico. From the Nine Mile Pluton, Marathon County, Wisconsin, USA. From Cerro los Remedios, Durango, Mexico.

Name: From the Greek for *false* and *brookite*, as it was for some time thought to be that mineral.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 736-738. (2) Ottemann, J. and G. Frenzel (1965) Der Chemismus der Pseudobrookite von Vulkaniten. Schweiz. Mineral. Petrog. Mitt., 45, 819-836 (in German with English abs.). (3) Bowles, J.F.W. (1988) Definition and range of composition of naturally occurring minerals with the pseudobrookite structure. Amer. Mineral., 73, 1377-1383. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 454. (5) Bucholz, T.W., A.U. Falster, and W.B. Simmons (2016) Pseudobrookite from the Nine Mile Pluton, Marathon County, Wisconsin: an occurrence from a plutonic environment. Can. Mineral., 54, 935-944.