

Tancaite-(Ce)**FeCe(MoO₄)₃·3H₂O**

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. As octahedral crystals to 0.2 mm.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 4-4.5
D(meas.) = n.d. D(calc.) = 3.738 Nonfluorescent.

Optical Properties: Transparent. *Color:* Red or pale brown. *Streak:* Yellow. *Luster:* Vitreous to adamantine.

Optical Class: n.d. $n(\text{calc.}) = 1.90$

Cell Data: *Space Group:* $R\bar{3}$. $a = 19.2901(3)$ $c = 47.2510(5)$ $Z = 48$; subcell $Pm\bar{3}m$. $a = 6.870(1)$

X-Ray Diffraction Pattern: Su Senargiu, Sarroch (CA), Sardinia, Italy.
3.42 (100), 3.93 (75), 4.84 (45), 1.825 (15), 1.340 (12), 2.785 (10), 1.610 (10)

Chemistry:	(1)	(2)	(1)	(2)
SiO ₂	0.34		Nd ₂ O ₃	3.66
CaO	0.09		Sm ₂ O ₃	0.19
Fe ₂ O ₃	11.29	10.94	ThO ₂	2.58
SrO	0.02		UO ₂	0.17
La ₂ O ₃	5.04		MoO ₃	58.62 59.16
Ce ₂ O ₃	10.35	22.49	<u>H₂O</u>	<u>7.43 7.41</u>
Pr ₂ O ₃	1.07		Total	100.85 100.00

(1) Su Senargiu, Sarroch (CA), Sardinia, Italy; average electron microprobe analysis supplemented by micro-Raman spectroscopy; corresponds to Fe³⁺_{1.03}(Ce_{0.46}La_{0.23}Nd_{0.16}Pr_{0.05}Sm_{0.01}U_{0.01}Th_{0.07})_{Σ=0.99}(Mo_{2.96}Si_{0.04})_{Σ=3.00}O₁₂·3H₂O. (2) FeCe(MoO₄)₃·3H₂O.

Mineral Group: Roselite group.

Occurrence: A secondary mineral formed in the oxidation zone of a sulfide ore vein in granite.

Association: Quartz, muscovite, molybdenite, pyrite, mendozavilite.

Distribution: At Su Senargiu, Sarroch (CA), Sardinia, Italy.

Name: Honors Giuseppe Tanca (b. 1943), an Italian amateur mineralogist, who discovered the mineral. A suffix indicates the dominant rare-earth element.

Type Material: Natural History Museum, University of Pisa, Italy (18911).

References: (1) Bonaccorsi, E. and P. Orlandi (2020) Tancaite-(Ce), ideally FeCe(MoO₄)₃·3H₂O: description and average crystal structure. Eur. J. Mineral., 32, 347-354.