

**Tancaite-(Ce)****FeCe(MoO<sub>4</sub>)<sub>3</sub>·3H<sub>2</sub>O**

**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)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)	
SiO <sub>2</sub>	0.34		Nd <sub>2</sub> O <sub>3</sub>	3.66	
CaO	0.09		Sm <sub>2</sub> O <sub>3</sub>	0.19	
Fe <sub>2</sub> O <sub>3</sub>	11.29	10.94	ThO <sub>2</sub>	2.58	
SrO	0.02		UO <sub>2</sub>	0.17	
La <sub>2</sub> O <sub>3</sub>	5.04		MoO <sub>3</sub>	58.62	59.16
Ce <sub>2</sub> O <sub>3</sub>	10.35	22.49	<u>H<sub>2</sub>O</u>	<u>7.43</u>	<u>7.41</u>
Pr <sub>2</sub> O <sub>3</sub>	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 Fe<sup>3+</sup><sub>1.03</sub>(Ce<sub>0.46</sub>La<sub>0.23</sub>Nd<sub>0.16</sub>Pr<sub>0.05</sub>Sm<sub>0.01</sub>U<sub>0.01</sub>Th<sub>0.07</sub>)<sub>Σ=0.99</sub>(Mo<sub>2.96</sub>Si<sub>0.04</sub>)<sub>Σ=3.00</sub>O<sub>12</sub>·3H<sub>2</sub>O. (2) FeCe(MoO<sub>4</sub>)<sub>3</sub>·3H<sub>2</sub>O.

**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(MoO<sub>4</sub>)<sub>3</sub>·3H<sub>2</sub>O: description and average crystal structure. *Eur. J. Mineral.*, 32, 347-354.