Ichnusaite $Th(MoO_4)_2 \cdot 3H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Crystals are tabular on {100}, to 200 μm.

Physical Properties: *Cleavage*: Perfect on {100}. *Fracture*: n.d. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.262

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Pearly adamantine. *Optical Class*: n.d.

Cell Data: *Space Group*: $P2_1/c$. $a = 9.6797(12)$ $b = 10.3771(13)$ $c = 9.3782(12)$ $\beta = 90.00(1)°$ Z = 4

X-ray Powder Pattern: Su Seinargiu, southwest of Sarroch, Cagliari, Sardinia, Italy. 3.479 (s), 3.257 (s), 5.66 (m), 3.930 (m), 3.074 (m), 2.816 (m), 9.7 (mw)

Chemistry:	(1)	(2)
MoO_3	47.86	47.51
ThO_2	43.40	43.57
H_2O	[8.74]	8.92
Total	100.00	100.00

(1) Su Seinargiu, southwest of Sarroch, Cagliari, Sardinia, Italy; average of 4 electron microprobe analyses, H_2O calculated by difference and from structure; corresponds to $Th_{0.99}Mo_{2.01}O_8 \cdot 3H_2O$.
(2) $Th(MoO_4)_2 \cdot 3H_2O$.

Occurrence: A secondary mineral in vugs in hydrothermal veins cutting porphyritic granite.

Association: Nuragheite, muscovite, xenotime-(Y), quartz, molybdenite.

Distribution: From Su Seinargiu, southwest of Sarroch, Cagliari, Sardinia, Italy.

Name: From the old Greek name for Sardinia, Ιχνουσσα, Ichnusa.

Type Material: Mineralogy collection, Natural History Museum, University of Pisa, Italy (19679).

References: (1) Orlandi, P., C. Biagioni, L. Bindi, and F. Nestola (2014) Ichnusaite, $Th(MoO_4)_2 \cdot 3H_2O$, the first natural thorium molybdate: Occurrence, description, and crystal structure. Amer. Mineral., 99, 2089-2094.