Nuragheite

Th(MoO$_4$)$_2$·H$_2$O

**Crystal Data:** Monoclinic.  *Point Group: 2/m.*  
As tabular crystals flattened 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.) = 5.147

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

**Cell Data:** Space Group: $P2_1/c$.  
$a = 7.358(2)$  
$b = 10.544(3)$  
$c = 9.489(2)$  
$\beta = 91.88(2)^\circ$  
$Z = 4$

**X-ray Powder Pattern:** Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy.  
3.546 (vs), 3.177 (s), 5.28 (m), 5.20 (m), 5.04 (m), 4.756 (m), 3.688 (m)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoO$_3$</td>
<td>49.38</td>
<td>46.33</td>
</tr>
<tr>
<td>ThO$_2$</td>
<td>45.39</td>
<td>50.51</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>[3.09]</td>
<td>3.16</td>
</tr>
<tr>
<td>Total</td>
<td>97.86</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy: average of 6 electron microprobe analyses, H$_2$O calculated from structure.  
(2) Th(MoO$_4$)$_2$·H$_2$O.

**Mineral Group:** Kamiokite group.

**Occurrence:** In hydrothermal quartz veins by alteration of a Mo-Bi deposit.

**Association:** Muscovite, xenotime-(Y), ichnusaite.

**Distribution:** In the Mo-Bi mineralization at Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy.

**Name:** From “nuraghe”, the main type of ancient megalithic building found in Sardinia, Italy, and the symbol of Sardinia and the Nuragic civilization.

**Type Material:** Natural History Museum, University of Pisa, Italy (19680).

**References:** (1) Orlandi, P., C. Biagioni, L. Bindi, and S. Merlino (2015) Nuragheite, Th(MoO$_4$)$_2$·H$_2$O, the second natural thorium molybdate and its relationships to ichnusaite and synthetic Th(MoO$_4$)$_2$. Amer. Mineral., 100, 267-273.