Cabvinite $Th_2F_7(OH)\cdot 3H_2O$

Crystal Data: Tetragonal. *Point Group:* 4/*m.* As square prismatic crystals to 100 μm, elongated along [001].

Physical Properties: *Cleavage:* Cleavage or parting on {001} suggested by SEM images. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 5.35

Optical Properties: Transparent. *Color:* White. *Streak*: White. *Luster*: Vitreous. *Optical Class:* n.d. *n*(calc.) = 1.838

Cell Data: *Space Group: I*4/*m.* a = 11.3689(2) c = 6.4175(1) Z = 4

X-ray Powder Pattern: Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy.
3.975 (s), 8.02 (ms), 2.004 (ms), 3.595 (m), 2.832 (m), 2.125 (m), 2.056 (m)

Chemistry:	(1)	(2)
ThO_2	82.35	79.04
F	19.93	19.90
H_2O	[10.21]	9.44
- O = F	8.40	8.38
Total	104.09	100.00

(1) Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy; average of 5 electron microprobe analyses supplemented by micro-Raman spectrometry, H_2O by difference; corresponds to $Th_2F_{6.7}(OH)_{1.3}\cdot 3H_2O$. (2) $Th_2F_7(OH)\cdot 3H_2O$.

Occurrence: From low-temperature hydrothermal alteration of Mo-Bi mineralization.

Association: Brookite, iron oxy-hydroxide ("limonite").

Distribution: From the Mo-Bi ore deposit of Su Seinargiu, Sarroch, Cagliari, Sardinia, Italy.

Name: Honors two Italian mineral collectors, Fernando Caboni (b. 1941) and Antonello Vinci (b. 1944), for their contribution to the knowledge of Su Seinargiu mineralogy. Cabvinite is the acronym based on their surnames, CABoni and VINci.

Type Material: Natural History Museum, University of Pisa, Italy (19711).

References: (1) Orlandi, P., C. Biagioni, and F. Zaccarini (2017) Cabvinite, $Th_2F_7(OH)\cdot 3H_2O$, the first natural actinide halide. Amer. Mineral., 102, 1384-1389.