Topsøeite $FeF_3(H_2O)_3$

Crystal Data: Tetragonal. *Point Group*: 4/*m*. As pseudocubic tetragonal prisms to 20 μm, forming stepped aggregates or massive in veins and crusts, to 100 μm.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.330

Optical Properties: n.d. *Color*: Yellow. S*treak*: n.d. *Luster*: n.d. *Optical Class*: n.d. *n*(calc.) = 1.63

Cell Data: Space Group: *P*4/*n*. *a* = 7.8381(3) *c* = 3.8674(1) Z = 2

X-ray Powder Pattern: Hekla volcano, Iceland.
5.55 (100), 3.92 (43), 3.47 (39), 2.479 (31), 2.77 (30), 1.753 (24), 3.17 (22)

Chemistry:

	(1)	(2)
Fe	38.52	33.46
F	38.23	34.15
Cl	1.03	
O	21.10	28.76
H		3.62
Total	98.88	100.00

(1) Hekla volcano, Iceland; average of 11 SEM-EDS analyses; corresponds to $Fe(F_{2.94}Cl_{0.04})_{\Sigma=2.98}(H_2O)_{1.94}$. (2) $FeF_3(H_2O)_3$.

Occurrence: In a very porous, friable aggregate of micrometer-sized crystals of several intimately mixed minerals formed around a volcanic fumarole.

Association: Hematite, opal, malladrite, heklaite, hydrokenoralstonite.

Distribution: At Hekla volcano, Iceland.

Name: Honors the family of Danish scientists and industrialists with three prominent individuals who made significant contributions to crystallography and chemistry during the last two centuries. Haldor Frederik Axel Topsøe, the elder (1842-1935), was the first Danish crystallographer in the modern sense of this word. Haldor Topsøe, the younger (1913-2013), grandson of Haldor Topsøe the elder, was a renowned Danish chemist and industrialist. Henrik Topsøe (b. 1944), the son of the former, is a renowned Danish chemist with significant contributions to the science of catalysis.

Type Material: Icelandic Institute of Natural History, Gardabaer, Iceland (NI 15515).

References: (1) Balić-Žunić, T., A. Garavelli, and D. Mitolo (2018) Topsøeite, $FeF_3(H_2O)_3$, a new fumarolic mineral from the Hekla Volcano, Iceland. Eur. J. Mineral., 30(4), 841-848. (2) (2020) Amer. Mineral., 105, 1118 (abs. ref. 1).