Vysokýite $U^{4+}[AsO_2(OH)_2]_4 \cdot 4H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As fibrous crystals, elongated along [010] to 8 mm.

Physical Properties: *Cleavage*: Perfect on {100} and {001}. *Fracture*: Uneven.
Tenacity: Brittle. Hardness = ~ 2 D(meas.) = n.d. D(calc.) = 3.3903

Optical Properties: Transparent to translucent. *Color*: Light green, colorless in transmitted light.
Streak: Greenish white to gray. *Luster*: 'Alabaster'.
Optical Class: Biaxial (n.d.). $\alpha' = 1.617(3)$ $\gamma' = 1.654(3)$ *Orientation*: $\alpha' \sim X$, $\gamma' \sim Z$.

Cell Data: *Space Group*: $P\bar{1}$. $a = 10.749(2)$ $b = 5.044(3)$ $c = 19.1778(7)$ $\alpha = 89.872(15)°$
$\beta = 121.534(15)°$ $\gamma = 76.508(15)°$ Z = 2

X-ray Powder Pattern: Jáchymov district, Karlovy Vary, NW Bohemia, Czech Republic.
8.872 (100), 8.067 (50), 3.197 (18), 3.411 (10), 6.399 (7), 4.773 (6), 3.220 (6)

Chemistry:	(1)	(2)
UO_2	29.44	30.90
SiO_2	1.03	
As_2O_5	48.95	52.60
SO_3	0.12	
H_2O	[15.88]	16.50
Total	95.42	100.00

(1) Jáchymov district, NW Bohemia, Czech Republic; average of 5 electron microprobe analyses, supplemented by IR spectroscopy, H_2O from structure analysis; corresponding to $U_{1.00}[AsO_2(OH)_2]_{3.90}(SiO_4)_{0.16}(SO_4)_{0.01} \cdot 4H_2O$. (2) $U[AsO_2(OH)_2]_4 \cdot 4H_2O$.

Occurrence: A post-mining secondary mineral developed by weathering in a humid climate of a Ag-As-Bi-Co-Ni-U hydrothermal vein-type deposit.

Association: Native arsenic, běhounekite, štěpite, kaatialaite, arsenolite, claudetite, gypsum.

Distribution: At the intersection of the Geschieber and Geyer veins, 10th level of the Svornost (former "Einigkeit") mine, Jáchymov (St Joachimsthal) ore district, Krušné Hory Mountains (Erzgebirge), ~20 km north of Karlovy Vary, NW Bohemia, Czech Republic.

Name: Honors Arnošt Vysoký (1823-1872), the former chief of the Jáchymov mines and smelters, chemist and metallurgist.

Type Material: Department of Mineralogy and Petrology, National Museum, Prague, Czech Republic.

References: (1) Plášil, J., J. Hloušek, R. Škoda, M. Novák, J. Sejkora, J. Čejka, F. Veselovský, and J. Majzlan (2013) Vysokýite, $U^{4+}(AsO_2(OH)_2)_4 \cdot 4H_2O$, a new mineral from Jáchymov, Czech Republic. Mineral. Mag., 77(8), 3055-3066. (2) (2016) Amer. Mineral., 101, 236-237 (abs. ref. 1).