Běhounekite $U(SO_4)_2(H_2O)_4$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. Crystals short prismatic to tabular, to 0.5 mm.

Physical Properties: *Cleavage*: Perfect on {100}. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = 2 D(meas.) = n.d. D(calc.) = 3.62

Optical Properties: Transparent. *Color*: Green. *Streak*: Gray to greenish gray. *Luster*: Strongly vitreous.
Optical Class: Biaxial(+). α = 1.590(2) β = 1.618(4) γ = 1.659(2) 2V(calc.) = 81°
Pleochroism: Moderate, *Z* = emerald green, *X* = *Y* = pale emerald green. *Absorption*: *Z* > *X* = *Y*.

Cell Data: *Space Group*: *Pnma*. *a* = 14.6464(3) *b* = 11.0786(3) *c* = 5.6910(14) *Z* = 4

X-ray Powder Pattern: Jáchymov ore district, Krušné hory Mts., Czech Republic.
7.330 (100), 6.112 (54), 4.787 (42), 3.080 (41), 5.538 (21), 3.478(20), 3.663 (17)

Chemistry:

	(1)	(2)
Y_2O_3	0.75	
SO_3	31.36	31.88
UO_2	53.40	53.77
H_2O	[14.53]	14.35
Total	100.04	100.00

(1) Jáchymov ore district, Krušné hory Mts., Czech Republic; average of 5 electron microprobe analyses, H_2O calculated from stoichiometry, OH calculated for charge balance, IR and structure analysis show no evidence for OH; corresponding to $(U_{0.99}Y_{0.03})_{\Sigma=1.02}(SO_4)_{1.97}(H_2O)_4(OH)_{0.11}$.
(2) $U(SO_4)_2(H_2O)_4$.

Occurrence: A secondary mineral on highly altered native arsenic in the oxidation zone of a polymetallic sulfarsenide deposit.

Association: Aresenic, arsenolite, kaatialaite, claudetite, gypsum.

Distribution: Geschieber vein (10th level, Svornost/Einigkeit shaft) at the intersection with the Geier vein structure, Jáchymov (St Joachimsthal) ore district, Krušné hory Mts., Western Bohemia, Czech Republic.

Name: Honors Professor František Běhounek (1898-1973), a Czech nuclear physicist.

Type Material: Mineralogical collection, National Museum, Prague, Czech Republic (P1p 2/2010).

References: (1) Plášil, J., K. Fejfarová, M. Novák, M. Dušek, R. Škoda, J. Hloušek, J. Čejka, J. Majzlan, J. Sejkora, V. Machovič, and D. Talla (2011) Běhounekite, $U(SO_4)_2(H_2O)_4$, from Jáchymov (St Joachimsthal), Czech Republic: the first natural U^{4+} sulphate. Mineralogical Magazine, 75, 2739-2753. (2) (2014) Amer. Mineral., 99, 551-552 (abs. ref. 1).