Čejkaite $Na_4(UO_2)(CO_3)_3$

Crystal Data: Monoclinic. *Point Group*: *m*. As globular sprays of prismatic crystals to 0.6 mm that show indistinct hexagonal outlines. *Twinning*: Rotational domains observed by X-ray study.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. D(meas.) = 3.67(1) D(calc.) = 3.74 Fluoresces weak yellow to yellow-green in SW and LW UV. Soluble in dilute acids and in water with pH < 6.5.

Optical Properties: Translucent. *Color*: Pale yellow to beige. *Streak*: Light yellow. *Luster*: Vitreous.
Optical Class: Biaxial. *n*(calc.) = 1.5825

Cell Data: *Space Group*: *Cc*. a = 9.2919(8) b = 16.0991(11) c = 6.4436(3) β = 91.404(5)° Z = 4

X-ray Powder Pattern: Svornost mine, Jáchymov, Czech Republic.
4.639 (100), 8.022 (92), 4.967 (68), 3.221 (63), 5.024 (60), 2.681 (60), 5.080 (57)

Chemistry:

	(1)	(2)
Na_2O	21.39	22.87
MgO	0.15	
FeO	0.53	
UO_3	53.93	52.77
CO_2	[24.00]	24.36
Total	100.00	100.00

(1) Svornost mine, Jáchymov, Czech Republic; ICP MS analysis supplemented by DTA and IR spectroscopy, CO_2 by difference; corresponds to $(Na_{3.77}Fe_{0.04}Mg_{0.02})_{\Sigma=3.83}(UO_2)_{1.03}(CO_3)_{2.98}$.
(2) $Na_4(UO_2)(CO_3)_3$.

Occurrence: As efflorescence over a calcite vein associated with disintegrated uraninite, formed in a relatively dry environment with rapid precipitation, due to a change of acidity of sodium-carbonate solutions to a pH range of 6.5 to 11.5.

Association: Andersonite, schröckingerite.

Distribution: From the Geschieber vein, Svornost mine, Jáchymov, Krušné hory Mountains (Erzgebirge), ~20 km north of Karlovy Vary, northwest Bohemia, Czech Republic [TL]; at Rožná, Western Moravia, Czech Republic, in Mina Euréka, Pyrenees, Spain and from localities in Hungary and the USA.

Name: Honors Jiří *Čejka*, D.Sc. (b. 1929), Director of the Museum of Natural History, National Museum, Prague, Czech Republic, from 1991 to 2001, for his contributions to the crystal chemistry of uranium minerals.

Type Material: Mineralogical collection, National Museum, Prague, Czech Republic (P1p 17/99).

References: (1) Ondruš, P., R. Skalá, F. Veselovský, J. Sejkora, and C. Vitti (2003) Čejkaite, the triclinic polymorph of $Na_4(UO_2)(CO_3)_3$ - a new mineral from Jáchymov, Czech Republic. Amer. Mineral., 88, 686-693. (2) Plášil, J., K. Fejfarová, M. Dušek, R. Škoda, and J. Rohlíček (2013) Revision of the symmetry and the crystal structure of čejkaite, Am. Mineral., 98, 549-553.
(3) Colmenero, F., J. Plášil, and J. Sejkora (2020) The crystal structures and mechanical properties of the uranyl carbonate minerals roubaultite, fontanite, sharpite, widenmannite, grimselite and cejkaite. Inorganic Chemistry Frontiers, 7, 4197-4221.