Nováčekite $Mg(UO_2)_2(AsO_4)_2 \cdot 10-12H_2O$

Crystal Data: Tetragonal. *Point Group:* $4/m$. In lamellar and subparallel aggregates of platy crystals, thick tabular on [001], with rounded $\{h0l\}$, to 3.5 cm.

Physical Properties: *Cleavage:* Perfect on {001}. Hardness = 2.5 D(meas.) = 3.25–3.7 D(calc.) = [3.27] Fluoresces dull green to bright lemon-yellow under SW and LW UV. Radioactive.

Optical Properties: Semitransparent. *Color:* Straw-yellow to lemon-yellow. *Luster:* Waxy. *Optical Class:* Uniaxial (–), anomalously biaxial (–). *Pleochroism:* X = nearly colorless; Y = Z = pale yellow to pale yellow-green. *Dispersion:* $r > v$. $\omega = 1.578$ $\epsilon = 1.548$ $\alpha = 1.543$ $\beta = 1.570$ $\gamma = 1.577$ 2V(meas.) = 0°–40°

Cell Data: *Space Group:* $P4_2/n$. $a = 7.18$–7.20 $c = 20.16$–20.22 Z = 2

X-ray Powder Pattern: Schneeberg, Germany.
10.2 (10), 3.58 (9), 5.06 (8), 3.35 (5), 6.80 (4), 2.52 (3), 2.26 (3)

Chemistry:

	(1)	(2)
UO_3	59.74	58.47
P_2O_5	6.87	7.25
As_2O_5	11.23	11.75
CuO	1.73	
MgO	3.41	4.12
H_2O	[17.02]	18.41
Total	[100.00]	100.00

(1) Schneeberg, Germany; H_2O by difference. (2) $Mg(UO_2)_2[(As,P)O_4]_2 \cdot 10H_2O$ with As:P = 1:1.

Mineral Group: Autunite group.

Occurrence: In the oxidized zone of uranium-bearing polymetallic hydrothermal mineral deposits.

Association: Zeunerite, uranophane (Schneeberg, Germany); schoepite, paraschoepite, arsenuranylite, metazeunerite, uranospinite (Cherkasar deposit, Uzbekistan); chalcopyrite, arsenopyrite, sphalerite (Wheal Owles, England).

Distribution: In Germany, from Schneeberg, Saxony; in the Black Forest, from the Schmiedestollen dump, near Wittichen, the Anton mine, Heubachtal, near Schiltach, and the Michael mine, Weiler, near Lahr; from Ellweiler, Rhineland-Palatinate. In the Rabéjac and Mas-d'Alary uranium deposits, south of Lodève, Hérault, France. At Wheals Owles and Edward, St. Just, Cornwall, England. From Needles Eye, Dalbeattie, Kirkcudbrightshire, Scotland. At the Cherkasar uranium deposit, Chaktal Mountains, Uzbekistan. Large crystals from the Pedra Preta mine, Brumado, Bahia, Brazil. In the Las Animas mine, Santa Eulalia, Chihuahua, Mexico. In the USA, from the Woodrow area, Grants district, Valencia Co., New Mexico; and in the Wichita Mountains, Comanche Co., Oklahoma; at the White King mine, Lake Co., Oregon.

Name: To honor Dr. Radim Nováček (1905–1942), Czech mineralogist, for his contributions to the mineralogy of uranium.

Type Material: Harvard University, Cambridge, Massachusetts, 103854, 103855; American Museum of Natural History, New York City, New York, 15777; National Museum of Natural History, Washington, D.C., USA, R5686.

References: (1) Frondel, C. (1951) Studies of uranium minerals (IX): saléeite and novacekite. Amer. Mineral., 36, 680–686. (2) Stern, T.W. and C.S. Annell (1954) A second locality of novacekite. Amer. Mineral., 39, 675–676. (3) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 177–183. (4) Elton, N.J., J.J. Hooper, and A.E. Jeal (1994) Nováčekite and metanováčekite from Cornwall. Mineral. Mag., 58, 513–514.