

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As pseudo-tetragonal lamellar crystals, to 0.5 mm, with {001} prominent; also as divergent fan-like or open-book splayed clusters, to 2 mm.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Fracture:* Laminated. *Tenacity:* Brittle. Hardness = ~2 D(meas.) = n.d. D(calc.) = 3.427 Radioactive.

**Optical Properties:** Transparent to translucent. *Color:* Light yellowish green, colorless in transmitted light. *Streak:* White. *Luster:* Vitreous, pearly on {001}. *Optical Class:* Biaxial (-).  $\alpha = 1.550(3)$   $\beta = 1.578(1)$   $\gamma = 1.581(1)$   $2V(\text{meas.}) = 40(5)^\circ$   $2V(\text{calc.}) = 36^\circ$  *Dispersion:* None. *Orientation:*  $X \sim \perp (001)$ ,  $Y$  and  $Z$  are close to the diagonals in the (001) plane of square-shape crystals.

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 7.100(3)$   $b = 7.125(3)$   $c = 10.751(4)$   $\alpha = 106.855(7)$   $\beta = 104.366(7)$   $\gamma = 90.420(6)^\circ$   $Z = 1$  or [I-centered cell]  $a = 7.100(3)$   $b = 7.125(3)$   $c = 19.955(8)$   $\alpha = 92.406(14)$   $\beta = 94.924(14)$   $\gamma = 90.420(6)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Belorechenskoye deposit, Northern Caucasus, Russia. 9.97 (100), 3.539 (93), 4.936 (62), 3.388 (43), 4.533 (41), 2.488 (27), 2.233 (27)

Chemistry:	(1)	(2)
MgO	0.71	
CoO	0.07	
NiO	5.38	7.07
ZnO	0.08	
P <sub>2</sub> O <sub>5</sub>	1.08	
As <sub>2</sub> O <sub>5</sub>	20.26	21.75
UO <sub>3</sub>	54.22	54.13
H <sub>2</sub> O	[17.10]	17.05
Total	98.90	100.00

(1) Belorechenskoye deposit, Northern Caucasus, Russia; average of 12 electron microprobe analyses, H<sub>2</sub>O by difference, presence of H<sub>2</sub>O, PO<sub>4</sub>, UO<sub>2</sub>, As<sup>3+</sup>O<sub>4</sub> groups confirmed by IR spectroscopy; corresponding to (Ni<sub>0.76</sub>Mg<sub>0.19</sub>Co<sub>0.01</sub>Zn<sub>0.01</sub>) $\Sigma=0.97$ U<sub>2.00</sub>O<sub>4</sub>(As<sub>1.86</sub>P<sub>0.16</sub>) $\Sigma=2.02$ O<sub>8</sub>·10H<sub>2</sub>O.  
(2) Ni(UO<sub>2</sub>)<sub>2</sub>(As<sup>3+</sup>O<sub>3</sub>)<sub>2</sub>·10H<sub>2</sub>O.

**Mineral Group:** Autunite group.

**Occurrence:** A secondary mineral found in small cavities and cracks in slightly oxidized uraninite-bearing dolomite veins.

**Association:** Dymkovite, uraninite, nickeline, gersdorffite, goethite, "limonite", annabergite.

**Distribution:** From adit #1, Belorechenskoye deposit, Belaya River basin, 60 km south of Maikop, Adygea Republic, Northern Caucasus, Russia.

**Name:** According to the naming rules for the autunite group as the hydrated analog of *metarauchite*, Ni(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>·8H<sub>2</sub>O - the root name honors Czech mineral collector Ludek Rauch (1951-1983).

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (3997/1).

**References:** (1) Pekov, I.V., V.V. Levitskiy, S.V. Krivovichev, A.A. Zolotarev, I.A. Bryzgalov, A.E. Zadov, and N.V. Chukanov (2012) New nickel-uranium-arsenic mineral species from the oxidation zone of the Belorechenskoye deposit, Northern Caucasus, Russia: I. Rauchite, Ni(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>·10H<sub>2</sub>O, a member of the autunite group. *European Journal of Mineralogy*, 24(5), 913-922. (2) (2015) *Amer. Mineral.*, 100, 336-338 (abs. ref. 1).