Crystal Data: Triclinic. *Point Group*: 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.) = 3.427Radioactive.

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(meas.) = 40(5)° 2V(calc.) = 36° *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: $P\overline{1}$. a = 7.100(3) b = 7.125(3) c = 10.751(4) a = 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) a = 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_2O_5	1.08	
	As_2O_5	20.26	21.75
	UO_3	54.22	54.13
	H_2O	[17.10]	17.05
	Total	98.90	100.00

(1) Belorechenskoye deposit, Northern Caucasus, Russia; average of 12 electron microprobe analyses, H₂O by difference, presence of H₂O, PO₄, UO₂, As³⁺O₄ groups confirmed by IR spectroscopy; corresponding to $(Ni_{0.76}Mg_{0.19}Co_{0.01}Zn_{0.01})_{\Sigma=0.97}U_{2.00}O_4(As_{1.86}P_{0.16})_{\Sigma=2.02}O_8 \cdot 10H_2O$. (2) Ni(UO₂)₂(As³⁺O₃)₂ · 10H₂O.

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*, $Ni(UO_2)_2(AsO_4)_2 \cdot 8H_2O$ - 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, $Ni(UO_2)_2(AsO_4)_2 \cdot 10H_2O$, a member of the autunite group. European Journal of Mineralogy, 24(5), 913-922. (2) (2015) Amer. Mineral., 100, 336-338 (abs. ref. 1).