Metarauchite $Ni(UO_2)_2(AsO_4)_2 \cdot 8H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As thick tabular crystals, to 1.0 mm, with a prevalent pinacoid (011). *Twinning*: Multiply twinned along {011}.

Physical Properties: *Cleavage*: Perfect on (011). F*racture*: Uneven. *Tenacity*: Very brittle. D(meas.) = n.d. D(calc.) = 3.81 *Hardness* = 2

Optical Properties: Transparent to translucent. *Color*: Yellow to light greenish yellow. *Streak*: Light green to pale yellow. *Luster*: Vitreous, pearly on (011). *Optical Class*: Biaxial (-). $\alpha = 1.625(3)$ $\beta \approx \gamma = 1.649$ (1.646–1.651) 2V(calc.) = 23-52°

Cell Data: *Space Group*: $P\bar{1}$. $a = 7.194(4)$ $b = 9.713(5)$ $c = 13.201(9)$ $\alpha = 75.79(5)°$ $\beta = 83.92(3)°$ $\gamma = 81.59(4)°$ Z = 2

X-ray Powder Pattern: Jáchymov, Czech Republic.
8.54 (100), 4.28 (49), 2.138 (32), 3.957 (12), 3.417 (12), 3.201 (10), 4.67 (8)

Chemistry:

	(1)	(2)
NiO	6.05	5.48
CoO	0.91	0.81
ZnO		0.14
MgO	0.09	0.50
UO_3	56.72	58.42
As_2O_5	21.31	18.34
P_2O_5	0.22	1.96
SiO_2	0.09	0.16
H_2O	14.61	14.19
Total	100.00	100.00

(1) Jáchymov, Czech Republic; average of 13 electron microprobe analyses supplemented by IR spectroscopy and DTA; corresponds to $(Ni_{0.82}Co_{0.12}Mg_{0.02})_{\Sigma=0.96}(UO_2)_{2.01}[(AsO_4)_{1.88}(PO_4)_{0.03}(SiO_4)_{0.02}]_{\Sigma=1.93} \cdot 8.21H_2O$. (2) Schneeburg, Germany; average of 8 electron microprobe analyses supplemented by IR spectroscopy and DTA; corresponds to $(Ni_{0.74}Mg_{0.13}Co_{0.11}Zn_{0.02})_{\Sigma=1.00}(UO_2)_{2.01}[(AsO_4)_{1.62}(PO_4)_{0.28}(SiO_4)_{0.03})]_{\Sigma=1.93} \cdot 7.99H_2O$.

Mineral Group: Autunite group.

Occurrence: A secondary mineral in strongly oxidized polymetallic vein material.

Association: Metazeunierite, erythrite, gypsum (Jáchymov); Ni-bearing metanováčekite, metazeunerite, pharmacosiderite (Schneeberg).

Distribution: From the Schweitzer vein of the Eduard mine, Jáchymov, Czech Republic. From the Adam Heber Mine, Neustädtel, Schneeberg district, Germany.

Name: Honors Czech mineral collector Luděk Rauch (1951-1983) who died prospecting in the Jáchymov mines.

Type Material: Natural History Museum, National Museum, Prague, Czech Republic (P1p 19/2008).

References: (1) Plášil, J., J. Sejkora, J. Čejka, M. Novák, J. Viñals, P. Ondruš, F. Veselovský, P. Škácha, J. Jehlička, V. Goliáš, and J. Hloušek (2010) Metarauchite, $Ni(UO_2)_2(AsO_4)_2 \cdot 8H_2O$, from Jáchymov, Czech Republic, and Schneeberg, Germany: a new member of the autunite group. Can. Mineral., 48, 335-350. (2) (2011) Amer. Mineral., 96, 943 (abs. ref. 1).