Metarauchite  
Ni(UO$_2$)$_2$(AsO$_4$)$_2$•8H$_2$O

**Crystal Data:** Triclinic.  
**Point Group:** 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).  
**Fracture:** Uneven.  
**Tenacity:** Very brittle.  
D(meas.) = n.d.  
D(calc.) = 3.81  
Hardness = 2

**Optical Properties:**  
**Color:** Yellow to light greenish yellow.  
**Streak:** Light green to pale yellow.  
**Luster:** Vitreous, pearly on (011).  
**Optical Class:** Biaxial (-).  
α = 1.625(3)  
β ≈ γ = 1.649 (1.646–1.651)  
2V(calc.) = 23-52°

**Cell Data:**  
**Space Group:** P1-  
a = 7.194(4)  
b = 9.713(5)  
c = 13.201(9)  
α = 75.79(5)°  
β = 83.92(3)°  
γ = 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:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiO</td>
<td>6.05</td>
<td>5.48</td>
</tr>
<tr>
<td>CoO</td>
<td>0.91</td>
<td>0.81</td>
</tr>
<tr>
<td>ZnO</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>MgO</td>
<td>0.09</td>
<td>0.50</td>
</tr>
<tr>
<td>UO$_2$</td>
<td>56.72</td>
<td>58.42</td>
</tr>
<tr>
<td>As$_2$O$_5$</td>
<td>21.31</td>
<td>18.34</td>
</tr>
<tr>
<td>P$_2$O$_5$</td>
<td>0.22</td>
<td>1.96</td>
</tr>
<tr>
<td>SiO$_2$</td>
<td>0.09</td>
<td>0.16</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>14.61</td>
<td>14.19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(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$_{0.02}$)$_{1.01}$[(AsO$_4$)$_{1.88}$(PO$_4$)$_{0.03}$
(SiO$_4$)$_{0.02}$]$_{2.19}$•8.21H$_2$O.  
(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$_{0.02}$)$_{1.00}$[(UO$_2$)$_{1.62}$(PO$_4$)$_{0.28}$
(SiO$_4$)$_{0.03}$]$_{2.19}$•7.99H$_2$O.

**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).

(2) (2011) Amer. Mineral., 96, 943 (abs. ref. 1).