Calciopetersite  

CaCu$_6$[(PO$_4$)$_2$(PO$_3$OH)](OH)$_6$·3H$_2$O

Crystal Data: Hexagonal.  

Point Group: 6/m.  

As acicular crystals with a hexagonal outline, to 0.4 mm, clustered in divergent sprays to 0.5 mm.

Physical Properties: Cleavage: None.  

Fracture: n.d.  

Hardness = “Soft”.  

Tenacity: Brittle.  

D(meas.) = n.d.  

D(calc.) = 3.179

Optical Properties: Translucent to transparent.  

Color: Olive-green, blue-green.  

Streak: Light olive-green.  

Luster: Vitreous.

Optical Class: Uniaxial (+).  

\( \omega = 1.674(5) \)  

\( e > 1.739 (-1.75) \)

Pleochroism: \( O \) = light green with yellowish tint, \( E \) = dark green.

Cell Data: Space Group: P6$_3$/m.  

\( a = 13.206(2) \)  

\( c = 5.824(3) \)  

\( Z = 2 \)

X-ray Powder Pattern: Moravia, Czech Republic.

11.51 (100), 4.346 (88), 2.888 (53), 4.140 (46), 3.321 (44), 3.837 (38), 2.877 (37)

Chemistry:

<table>
<thead>
<tr>
<th>K$_2$O</th>
<th>0.09</th>
<th>Dy$_2$O$_3$</th>
<th>0.33</th>
</tr>
</thead>
<tbody>
<tr>
<td>CaO</td>
<td>4.39</td>
<td>Yb$_2$O$_3$</td>
<td>0.21</td>
</tr>
<tr>
<td>CuO</td>
<td>51.25</td>
<td>Bi$_2$O$_3$</td>
<td>0.09</td>
</tr>
<tr>
<td>Y$_2$O$_3$</td>
<td>1.61</td>
<td>SiO$_2$</td>
<td>0.52</td>
</tr>
<tr>
<td>La$_2$O$_3$</td>
<td>0.64</td>
<td>P$_2$O$_5$</td>
<td>20.98</td>
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<tr>
<td>Ce$_2$O$_3$</td>
<td>1.98</td>
<td>As$_2$O$_3$</td>
<td>2.70</td>
</tr>
<tr>
<td>Pr$_2$O$_3$</td>
<td>0.25</td>
<td>H$_2$O</td>
<td>[12.45]</td>
</tr>
<tr>
<td>Nd$_2$O$_3$</td>
<td>1.40</td>
<td>Total</td>
<td>98.89</td>
</tr>
</tbody>
</table>

(1) Moravia, Czech Republic; average of 8 electron microprobe analyses supplemented by IR spectroscopy, H$_2$O calculated; corresponds to (Ca$_{0.58}$Y$_{0.13}$Ce$_{0.11}$Nd$_{0.08}$La$_{0.04}$K$_{0.02}$Dy$_{0.02}$Pr$_{0.01}$Yb$_{0.01}$)$_{1-1.00}$(Cu$_{5.90}$Ca$_{0.14}$)$_{1-6.04}$(PO$_4$)$_{2.06}$(PO$_3$OH)$_{0.65}$(AsO$_4$)$_{0.22}$(SiO$_2$)$_{0.08}$(OH)$_{5-3.01}$(OH)$_6$·3.00H$_2$O.

Mineral Group: Mixite group.

Occurrence: A secondary mineral derived by weathering chalcopyrite and other copper sulfides.

Association: Chrysocolla, a Ce-dominant analogue of petersite-(Y), malachite, allophane, goethite, lepidocrocite, chalcopyrite, pyrite, covellite, chalcocite, quartz (Czech Republic).

Distribution: From an abandoned quarry near Domašov nad Bystřicí, 20 km northeast of Olomouc, northern Moravia, Czech Republic. Also from the Fantoni quarry, Monte Beni, Firenzuela, Florence, Tuscany, Italy.

Name: For its composition (Ca > Y) and relationship to petersite-(Y).

Type Material: Natural History Museum, National Museum, Prague, Czech Republic (P1p-20/2000).

References:  