

**Calciopetersite****CaCu<sub>6</sub>[(PO<sub>4</sub>)<sub>2</sub>(PO<sub>3</sub>OH)](OH)<sub>6</sub>•3H<sub>2</sub>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 (+).  $\omega = 1.674(5)$   $\epsilon > 1.739$  (~1.75) *Pleochroism:* O = light green with yellowish tint, E = dark green.

**Cell Data:** Space Group: *P6<sub>3</sub>/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:**

	(1)		(1)
K <sub>2</sub> O	0.09	Dy <sub>2</sub> O <sub>3</sub>	0.33
CaO	4.39	Yb <sub>2</sub> O <sub>3</sub>	0.21
CuO	51.25	Bi <sub>2</sub> O <sub>3</sub>	0.09
Y <sub>2</sub> O <sub>3</sub>	1.61	SiO <sub>2</sub>	0.52
La <sub>2</sub> O <sub>3</sub>	0.64	P <sub>2</sub> O <sub>5</sub>	20.98
Ce <sub>2</sub> O <sub>3</sub>	1.98	As <sub>2</sub> O <sub>5</sub>	2.70
Pr <sub>2</sub> O <sub>3</sub>	0.25	<u>H<sub>2</sub>O</u>	[12.45]
Nd <sub>2</sub> O <sub>3</sub>	1.40	Total	98.89

(1) Moravia, Czech Republic; average of 8 electron microprobe analyses supplemented by IR spectroscopy, H<sub>2</sub>O calculated; corresponds to (Ca<sub>0.58</sub>Y<sub>0.13</sub>Ce<sub>0.11</sub>Nd<sub>0.08</sub>La<sub>0.04</sub>K<sub>0.02</sub>Dy<sub>0.02</sub>Pr<sub>0.01</sub>Yb<sub>0.01</sub>) $\Sigma=1.00$ (Cu<sub>5.90</sub>Ca<sub>0.14</sub>) $\Sigma=6.04$ [(PO<sub>4</sub>)<sub>2.06</sub>(PO<sub>3</sub>OH)<sub>0.65</sub>(AsO<sub>4</sub>)<sub>0.22</sub>(SiO<sub>4</sub>)<sub>0.08</sub>] $\Sigma=3.01$ (OH)<sub>6</sub>•3.00H<sub>2</sub>O.

**Mineral Group:** Mixite group.

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

**Association:** Chrysocola, 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, Firenzuola, 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:** (1) Sejkora, J., P. Novotný, M. Novák, V. Šrein, and P. Berlepsch (2005) Calciopetersite from Domašov nad Bystřicí, northern Moravia, Czech Republic, a new mineral species of the mixite group. *Can. Mineral.*, 43, 1393-1400. (2) (2006) *Amer. Mineral.*, 91, 710 (abs. ref. 1). (3) Biagioni, C., E. Bonaccorsi, and P. Orlandi (2012) Occurrence and crystal structure of calciopetersite from Monte Beni (Firenzuola, Florence, Tuscany, Italy). *Atti della Società Toscana di Scienze Naturali Residente in Pisa, Memorie, Serie A: Processi Verbali*, 116, 17-22.