Petersite-(Y) $(Ca,Y,Ce,Nd)Cu_6(PO_4)_3(OH)_6 \cdot 3H_2O$

Crystal Data: Hexagonal. *Point Group:* $6/m$ or 6. As prismatic crystals, showing only $\{10\bar{1}0\}$ and {0001}, to 0.1 mm, in clusters and radiating sprays, which may be nearly spherical.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 3.41 D(calc.) = 3.40

Optical Properties: Semitransparent. *Color:* Bright yellowish green. *Luster:* Highly vitreous on $\{10\bar{1}0\}$ to dull on {0001}.
Optical Class: Uniaxial (+). *Pleochroism:* Strong; O = light yellowish green; E = green.
Absorption: $E \gg O$. $\omega = 1.666(4)$ $\epsilon = 1.747(4)$

Cell Data: *Space Group:* $P6_3/m$ or $P6_3$. $a = 13.288(5)$ $c = 5.877(5)$ Z = 2

X-ray Powder Pattern: Laurel Hill, New Jersey, USA.
11.6 (100), 2.433 (60), 4.36 (50), 3.49 (40), 2.877 (40), 2.509 (30), 1.961 (20)

Chemistry:

	(1)
P_2O_5	23.1
Y_2O_3	2.5
La_2O_3	1.0
Ce_2O_3	2.5
Nd_2O_3	1.2
Sm_2O_3	1.2
FeO	0.8
CuO	52.1
CaO	2.4
H_2O	[13.2]
Total	[100.0]

(1) Laurel Hill, New Jersey, USA; total Fe as FeO, determined by microchemical test, H_2O by difference; corresponds to $(Ca_{0.40}Y_{0.20}Ce_{0.14}Nd_{0.12}Fe_{0.10}Sm_{0.06}La_{0.06})_{\Sigma=1.08}$ $Cu_{6.04}(PO_4)_3(OH)_{5.80} \cdot 3.39H_2O$.

Mineral Group: Mixite group.

Occurrence: A very rare secondary mineral in biotite-plagioclase hornfels near a diabase stock cutting Triassic sediments (Laurel Hill, New Jersey, USA).

Association: Chalcopyrite, malachite, chrysocolla, hematite, chlorite, "opal" (Laurel Hill, New Jersey, USA); malachite, quartz (Herrensegen mine, Germany).

Distribution: From Laurel Hill, Secaucas, Hudson Co., New Jersey, USA. In Germany, from the Herrensegen mine, near Schapbach, and the Silberbrünnle mine, near Gengenbach (Nd-rich), Black Forest. At the Sa Duchessa mine, Oridda district, Sardinia. From the Hanama quarry, Hai-Yama, Shiga Prefecture, Japan.

Name: To honor the brothers Thomas A. Peters (1947–), Curator of minerals at the Paterson Museum, Paterson, New Jersey, USA, and Joseph Peters (1951–), on the mineralogy curatorial staff of the American Museum of Natural History, New York City, New York, USA, and for *yttrium* as the dominant rare-earth element.

Type Material: National Museum of Natural History, Washington, D.C., USA, 148973.

References: (1) Peacor, D.R. and P.J. Dunn (1982) Petersite, a REE and phosphate analog of mixite. Amer. Mineral., 67, 1039–1042.