Piergorite-(Ce) $Ca_8Ce_2AlLiSi_6B_8O_{36}(OH)_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. *Twinning*: Displays 'L'-shapes by twinning on {30$\bar{1}$} and polysynthetically on {100}. As tabular to acicular crystals to 400 μm.

Physical Properties: *Cleavage*: Very good on {010}. *Tenacity*: Brittle. *Fracture*: n.d.
Hardness = 5.5-6 (by analogy to hellandite) D(meas.) = n.d. D(calc.) = 3.67

Optical Properties: Translucent. *Color*: Colorless to pale yellow. *Streak*: n.d. *Luster*: Vitreous.
Optical Class: Biaxial (-). α = 1.717 (1) β = 1.728 (1) γ = 1.735 (1) 2V(meas.) = 68(2)°
2V(calc.) = 77(10)° *Orientation*: $X = b$, $Z \wedge c = 7(1)°$.

Cell Data: *Space Group*: *P*2/*a*. a = 28.097(3) b = 4.777(1) c = 10.236(2) β = 96.81(1)° Z = 2

X-Ray Diffraction Pattern: Calculated pattern.
2.65 (100), 1.91 (48), 2.90 (45), 2.78 (43), 3.33 (40), 3.01 (34), 3.20 (31)

Chemistry:	(1)		(1)		(1)
SiO_2	23.90	BaO	0.04	Eu_2O_3	0.02
B_2O_3	18.41	ThO_2	5.73	Gd_2O_3	0.10
BeO	0.60	UO_2	0.79	Dy_2O_3	0.07
Li_2O	0.48	ZrO_2	0.14	Er_2O_3	0.04
Fe_2O_3	2.09	V_2O_5	0.02	Yb_2O_3	0.04
MnO	0.35	Y_2O_3	0.44	H_2O	0.50
TiO_2	0.71	La_2O_3	3.33	F	0.96
Al_2O_3	1.47	Ce_2O_3	6.24	Cl	0.10
MgO	0.06	Pr_2O_3	0.62	–O = F+Cl	0.43
CaO	31.06	Nd_2O_3	1.57	Total	99.61
Na_2O	0.01	Sm_2O_3	0.15		

(1) Tre Croci, Vetralla, Viterbo province, Italy; average electron microprobe and secondary ion mass spectrometric analyses.

Occurrence: In miarolitic cavities in syenitic volcanic ejectum.

Association: Sanidine, mica, magnetite, rutile, titanite, other Th-U-REE bearing minerals.

Distribution: At Tre Croci, Vetralla, Viterbo province, Italy.

Name: An acronym from the names of two Italian collectors, Giancarlo *Pier*ini and Pietro *Gori*ni, who provided the material studied. A suffix indicates the dominant rare earth element.

Type Material: Mineralogy Museum, University of Pavia, Italy (2005-001).

References: (1) Boiocchi, M., A. Callegari, and L. Ottolini (2006) The crystal structure of piergorite-(Ce), $Ca_8Ce_2(Al_{0.5}Fe^{3+}_{0.5})_{\Sigma1}(\square,Li,Be)_2Si_6B_8O_{36}(OH,F)_2$: A new borosilicate from Vetralla, Italy, with a modified hellandite-type chain. Amer. Mineral., 91, 1170-1177.