Gatelite-(Ce) $(Ca, Ce)_4(Al, Mg, Fe)_4(Si_2O_7)(SiO_4)_3(O, F, OH)_3$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As bladed crystals elongated and striated along [010] to 700 μm; as oriented intergrowths in törnebohmite-(Ce) with [010] of both species parallel.

Physical Properties: *Cleavage*: Good on {100}; imperfect on {001}. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = 6-7 D(meas.) = n.d. D(calc.) = 4.51

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: *n*(calc.) = 1.807

Cell Data: *Space Group*: $P2_1/a$. a = 17.770(4) b = 5.651(1) c = 17.458(4) β = 16.18(2)° Z = 4

X-ray Powder Pattern: Calculated pattern.
2.97 (100), 15.67 (87), 2.61 (56), 3.49 (50), 2.83 (44), 4.61 (33), 2.74 (32)

Chemistry:

	(1)
CaO	5.660
La_2O_3	8.170
Ce_2O_3	20.580
Pr_2O_3	2.215
Nd_2O_3	11.740
Sm_2O_3	1.755
Dy_2O_3	0.150
Y_2O_3	0.370
MgO	1.910
FeO	2.133
Al_2O_3	14.435
Nb_2O_5	0.075
SiO_2	28.105
F	0.245
H_2O	[1.34]
– O = F	0.103
Total	98.780

(1) Trimouns talc deposit, Luzenac, Ariège, French Pyrenees, H_2O calculated from stoichiometry; corresponds to $(Ca_{1.09}La_{0.54}Ce_{1.36}Pr_{0.14}Nd_{0.75}Sm_{0.11}Dy_{0.01}Y_{0.04})_{\Sigma=4.04}(Al_{3.06}Mg_{0.51}Fe^{2+}_{0.32}Nb_{0.01})_{\Sigma=3.90}$ $Si_{5.06}O_{20.26}(OH)_{1.60}F_{0.14}$. The slight excess of Si and REE cations could be due to the presence of minute lamellae of törnebohmite-(Ce).

Mineral Group: Gatelite supergroup, gatelite group.

Occurrence: In dolomitic portions of a talc deposit.

Association: Pyrite, aeschynite-(Y), dolomite, törnebohmite-(Ce), dissakisite-(Ce), talc, quartz.

Distribution: From the Trimouns talc deposit, Luzenac, Ariège, French Pyrenees.

Name: Honors Pierre *Gatel*, French mineral collector, founder of the Association Française de Microminéralogie.

Type Material: Natural History Museum, Paris, France (MNHM 201.228).

References: (1) Bonazzi, P., L. Bindi, and G. Parodi (2003) Gatelite-(Ce), a new REE-bearing mineral from Trimouns, French Pyrenees: Crystal structure and polysomatic relationships with epidote and törnebohmite-(Ce). Amer. Mineral., 88(8), 223-228. (2) Bonazzi, P., D. Holtstam, and L. Bindi (2019) Gatelite-supergroup minerals: recommended nomenclature and review. Eur. J. Mineral., 31(1), 173-181.