Gatelite-(Ce)  \((\text{Ca, Ce})_4(\text{Al, Mg, Fe})_4(\text{Si}_2\text{O}_7)(\text{SiO}_4)_3(\text{O, F, OH})_3)\)

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As bladed crystals elongated and striated along [010] to 700 \(\mu\)m; 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


**Cell Data:** *Space Group:* P2_1/a. \(a = 17.770(4)\) \(b = 5.651(1)\) \(c = 17.458(4)\) \(\beta = 16.18(2)^\circ\) \(Z = 4\)

**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:**

\[
\begin{align*}
\text{CaO} & \quad 5.660 \\
\text{La}_2\text{O}_3 & \quad 8.170 \\
\text{Ce}_2\text{O}_3 & \quad 20.580 \\
\text{Pr}_2\text{O}_3 & \quad 2.215 \\
\text{Nd}_2\text{O}_3 & \quad 11.740 \\
\text{Sm}_2\text{O}_3 & \quad 1.755 \\
\text{Dy}_2\text{O}_3 & \quad 0.150 \\
\text{Y}_2\text{O}_3 & \quad 0.370 \\
\text{MgO} & \quad 1.910 \\
\text{FeO} & \quad 2.133 \\
\text{Al}_2\text{O}_3 & \quad 14.435 \\
\text{Nb}_2\text{O}_5 & \quad 0.075 \\
\text{SiO}_2 & \quad 28.105 \\
\text{F} & \quad 0.245 \\
\text{H}_2\text{O} & \quad [1.34] \\
- & \quad = \text{F} \quad 0.103 \\
\text{Total} & \quad 98.780
\end{align*}
\]

(1) Trimouns talc deposit, Luzenac, Ariège, French Pyrenees. \(\text{H}_2\text{O}\) calculated from stoichiometry; corresponds to \((\text{Ca}_{0.09}\text{La}_{0.5}\text{Ce}_{1.36}\text{Pr}_{0.14}\text{Nd}_{0.75}\text{Sm}_{0.11}\text{Dy}_{0.03}\text{Y}_{0.04}\text{H}_{0.01}\text{F}_{0.04}(\text{Al}_{1.06}\text{Mg}_{0.45}\text{Fe}^{2+}_{0.32}\text{Nb}_{0.01})_{2-3.90}\text{Si}_{5.06}\text{O}_{20.26}(\text{OH})_{0.06}\text{F}_{0.14}\). 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).