Florencite-(La)  

\[(\text{La, Ce})\text{Al}_3(\text{PO}_4)_2(\text{OH})_6\]

Crystal Data: Hexagonal, may be metamict.  
Point Group: \(\overline{3} 2/m\). As pseudocubic rhombohedra, to 30 \(\mu\)m; as colloform crusts.

Physical Properties: 
Cleavage: Good on \{0001\}. Fracture: Splintery. Tenacity: Brittle.  
Hardness = \(\sim 5\)  
D(meas.) = 3.52(2)  
D(calc.) = 3.71

Optical Properties: Transparent to translucent.  
Color: Colorless to pale yellow; white in aggregates.  
Luster: Greasy to resinous.  
Optical Class: Uniaxial (+). \(\omega = 1.694(2)\) \(\epsilon = 1.701(2)\)

Cell Data: Space Group: \(R\bar{3}m\).  
\(a = 6.987(2)\)  
\(c = 16.248(6)\)  
\(Z = 3\)

X-ray Powder Pattern: Shituru deposit, Congo; near florencite-(Ce) and -(Nd).  
2.93 (100), 5.67 (90), 2.171 (80), 3.49 (70), 1.884 (70), 1.743 (70), 1.601 (70)

Chemistry:  
| \(\text{SO}_3\) | 0.71 | \(\text{Eu}_2\text{O}_3\) | 0.18 |  
| \(\text{P}_2\text{O}_5\) | 29.1 | \(\text{Gd}_2\text{O}_3\) | 0.9 | 0.51 |  
| \(\text{SiO}_2\) | 1.4 | \(\text{Yb}_2\text{O}_3\) | 0.04 |  
| \(\text{Al}_2\text{O}_3\) | 32.0 | \(\text{Fe}_2\text{O}_3\) | 0.18 |  
| \(\text{Y}_2\text{O}_3\) | 0.11 | \(\text{MgO}\) | 0.9 |  
| \(\text{La}_2\text{O}_3\) | 19.0 | \(\text{CaO}\) | 0.2 | 1.33 |  
| \(\text{Ce}_2\text{O}_3\) | 10.5 | \(\text{SrO}\) | 3.88 |  
| \(\text{Pr}_2\text{O}_3\) | 4.70 | \(\text{BaO}\) | 0.62 |  
| \(\text{Nd}_2\text{O}_3\) | 0.8 | 4.15 | \(\text{H}_2\text{O}\) | n.d. | 10.43 |  
| \(\text{Sm}_2\text{O}_3\) | 0.18 | Total | [99.97] |  

(1) Shituru deposit, Congo; by electron microprobe, corresponding to \((\text{La}_{0.61}\text{Ce}_{0.34}\text{Gd}_{0.03}\text{Nd}_{0.02})\Sigma=1.00\text{Al}_3(\text{PO}_4)_2(\text{OH})_6\).  
(2) Bohemia, Czech Republic; by electron microprobe, original total given as 100.00%; corresponding to \((\text{La}_{0.36}\text{Sr}_{0.15}\text{Pr}_{0.14}\text{Nd}_{0.12}\text{Ce}_{0.02}\text{Ba}_{0.02}\text{Gd}_{0.01})\Sigma=1.00(\text{Al}_{2.16}\text{Fe}_{0.01})\Sigma=3.17([\text{PO}_4]_1.94(\text{SO}_4)_0.04)\Sigma=1.98(\text{OH})_5.99\).

Mineral Group: Crandallite group.

Occurrence: A secondary mineral in weathered metamorphosed corrensitic siltstone (Shituru deposit, Congo); an authigenic mineral in sandstone.

Association: Synchysite-(Nd), manganan siderite, sphalerite, kaolinite, “chalcedony”.

Distribution: From the Shituru copper deposit, Likasi, Katanga Province, Congo (Shaba Province, Zaire). At the Bangombé natural fission reactor, Gabon. In the Hamr, Stráž, and Holíčky deposits, Czech Republic.

Name: For a florencite with lanthanum as the dominant rare earth element.

Type Material: n.d.

References:  