

Fougèrite



Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. As tabular hexagonal crystals to 0.5 μm .

Physical Properties: *Cleavage:* n.d. *Tenacity:* n.d. *Fracture:* n.d. *Hardness* = n.d.
D(meas.) = n.d. D(calc.) = n.d. Unstable in air.

Optical Properties: Translucent. *Color:* Blue-green (5BG6/1 in the Munsell system), turns to greenish gray (5GY6/1), after ~10 minutes in air, then to pale olive (5Y6/4) after 1 hour, and to gray with light olive spots (2.5Y5/6) after ~24 hours. *Streak:* n.d. *Luster:* n.d.
Optical Class: n.d.

Cell Data: *Space Group:* $R\bar{3} m$. $a = 3.190(1)$ $c = 23.85(6)$ $Z = 3$

X-ray Powder Pattern: Fougères, Brittany, France.
7.97 (100), 2.692 (34), 3.966 (31), 2.392 (21), 2.027 (19), 1.563 (10), 1.595 (9)

Chemistry: (1) Fougères, Brittany, France; average electron microprobe, Mössbauer and Raman spectrometric analyses; corresponds to $[\text{Fe}^{2+}_{1-x}\text{Fe}^{3+}_x\text{Mg}_y(\text{OH})_{2+2y}]^{+x} [x/n A^{-n} m\text{H}_2\text{O}]^{-x}$, with $1/4 \leq x/(1+y) \leq 1/3$, where A is the anion and n its valency.

Mineral Group: Hydrotalcite supergroup, fougèrite group.

Occurrence: Forms by partial oxidation and hydrolysis of aqueous Fe^{2+} . Unstable in air and transforms to lepidocrocite or goethite.

Association: Kaolinite, vermiculite, quartz, illite, feldspars.

Distribution: From a subsurface horizon of a forested Gleysol, near Fougères, Brittany, France.

Name: For the occurrence, near *Fougères*, Brittany, France.

Type Material: n.d.

References: (1) Trolard, F., G. Bourrié, M. Abdelmoula, P. Refait, and F. Feder (2007) Fougèrite, a new mineral of the pyroaurite-iowaite group: description and crystal structure. *Clays and Clay Minerals*, 55(3), 323-334. (2) Christiansen, B.C., K. Dideriksen, L.L. Skovbjerg, S. Nedel, and S.L.S. Stipp (2011) On Fougèrite. *Clays and Clay Minerals*, 59(1), 3-9. (3) Trolard, F. and G. Bourrié (2011) Reply to the letter to the editor by Christiansen, Dideriksen, Skovbjerg, Nedel, and Stipp "On Fougèrite". *Clays and Clay Minerals*, 59(1), 10-12. (4) Mills, S.J., A.G. Christy, J.-M.R. Génin, T. Kameda, and F. Colombo (2012) Nomenclature of the hydrotalcite supergroup: natural layered double hydroxides. *Mineral. Mag.*, 76(5), 1289-1336.