Fougèrite $Fe^{2+}_4Fe^{3+}_2(OH)_{12}(CO_3)\cdot 3H_2O$

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 $[Fe^{2+}_{1-x}Fe^{3+}_xMg_y(OH)_{2+2y}]^{+x}$ $[x/n\ A^{-n}\ mH_2O]^{-x}$, 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 *Fougèr*es, Brittany, France.

Type Material: n.d.

References: (1) Trolard, F., G. Bourrié, M. Abdelmoula, P. Refait, and F. Feder (2007) Fougerite, 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 Fougerite. 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 Fougerite". 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.