Ferrosaponite $Ca_{0.3}(Fe^{2+}, Mg, Fe^{3+})_3(Si, Al)_4O_{10}(OH)_2 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group*: n.d. As spherulites, to 2 mm, and as radial columnar aggregates within calcite.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: Uneven. *Tenacity*: Sectile. Hardness = 2 D(meas.) = 2.49(5) D(calc.) = 2.435

Optical Properties: Translucent. *Color*: Dark green, brownish on oxidation. *Streak*: Green. *Luster*: Vitreous.
Optical Class: Biaxial (-). α(calc.) = 1.448 β = 1.641(2) γ = 1.642(2) 2V(meas.) = 5(3)°
Pleochroism: Brownish. *Absorption*: $Z > Y$. *Orientation*: $X \approx c$.

Cell Data: *Space Group*: n.d. a = 5.365(2) b = 9.337(4) c = 14.65(2) β = 94.9(1)° Z = 2

X-ray Powder Pattern: Levoberezhye "Iceland spar" deposit, Evenkiya, Siberia, Russia.
3.03 (100), 7.37 (90), 4.72 (90), 2.585 (90), 2.429 (90), 1.549 (90), 3.80 (80), 14.61 (40) - (expands to 17.9 after glycolation).

Chemistry:

	(1)
Na_2O	0.21
K_2O	0.07
CaO	3.31
MgO	6.62
FeO	21.23
Fe_2O_3	8.78
Al_2O_3	9.95
SiO_2	33.15
H_2O	17.92
Total	101.24

(1) Levoberezhye "Iceland spar" deposit, Evenkiya, Siberia, Russia; average electron microprobe analysis, H_2O by TGA, Fe^{2+}:Fe^{3+} by Mössbauer spectroscopy; corresponds to $Ca_{0.31}Na_{0.04}K_{0.01}(Fe^{2+}_{1.56}Mg_{0.87}Fe^{3+}_{0.52})_{\Sigma=2.95}[(Si_{2.91}Al_{1.03}Fe^{3+}_{0.06})_{\Sigma=4}O_{10}](OH)_2 \cdot 4.24H_2O$.

Polymorphism & Series: Member of the annite-phlogopite series.

Mineral Group: Smectite group.

Occurrence: A hydrothermal mineral associated with pillow basalts.

Association: Calcite, pyrite, quartz, mordenite, heulandite-Ca, stilbite-Ca.

Distribution: From the Levoberezhye "Iceland spar" deposit, near the Nizhnyaya Tunguska River, Evenkiya, Siberia, Russia.

Name: Prefix, *ferro*, denotes the Fe^{2+}-dominant analog of *saponite*.

Type Material: Freiberg University of Mining and Technology, Germany.

References: (1) Chukanov, N.V., I.V. Pekov, A.E. Zadov, V.N. Chukanova, and S. Mökkel (2003) Ferrosaponite $Ca_{0.3}(Fe^{2+},Mg,Fe^{3+})_3(Si,Al)_4O_{10}(OH)_2 \cdot 4H_2O$, a new trioctahedral smectite (from Evenkiya). Zap. Vseross. Mineral. Obshch., 132(2), 68-74 (in Russian, English abs.). (2) (2004) Amer. Mineral., 89(2), 467 (abs. ref. 1). (3) (2004) Can. Mineral., 42(1), 225 (abs. ref. 1).