## $Pumpellyite-(Fe^{2+}) \qquad Ca_2(Fe^{2+},Fe^{3+},Mg)Al_2(SiO_4)(Si_2O_7)(OH)_2 \bullet H_2O(SiO_4)(Si_2O_7)(OH)_2 \bullet H_2O(SiO_4)(S$

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Crystal Data: Monoclinic. Point Group: 2/m. As rosettes and spherulites in stringers.

**Physical Properties:** Hardness =  $[\sim 5]$  (by analogy to the pumpellyite group). D(meas.) = 3.31 D(calc.) = [3.35]

**Optical Properties:** Semitransparent. Color: [Greenish black.] Luster: [Vitreous.] Optical Class: Biaxial (-). Pleochroism: X = pale yellow; Y = deep grass-green; Z = yellowish brown to reddish brown. Orientation:  $Z \wedge c = 5^{\circ}$ .  $\alpha = 1.728$   $\beta = 1.748$   $\gamma = 1.754$  $2V(\text{meas.}) = -60^{\circ}$  to  $30^{\circ}$ 

**Cell Data:** Space Group: n.d. a = 8.89(2) b = 6.03(3) c = 19.19(4)  $\beta = 97^{\circ}49(12)'$  Z = 4

**X-ray Powder Pattern:** Noril'sk, Russia. 2.91 (100), 3.79 (64), 2.75 (60), 2.22 (36), 2.66 (34), 4.76 (30), 4.43 (27)

Chemistry:

	(1)
$SiO_2$	34.83
$TiO_2$	0.10
$Al_2O_3$	10.10
$\mathrm{Fe}_2\mathrm{O}_3$	18.05
$\mathrm{FeO}$	9.09
MnO	0.02
MgO	0.94
CaO	20.50
$Na_2O$	0.18
$H_2O^+$	5.62
Total	99.43

(1) Noril'sk, Russia; corresponds to  $(Ca_{1.94}Na_{0.03}Fe_{0.02}^{2+})_{\Sigma=1.99}(Fe_{0.65}^{2+}Fe_{0.25}^{3+}Mg_{0.12})_{\Sigma=1.02}$  $(Al_{1.06}Fe_{0.95}^{3+})_{\Sigma=2.01}Si_{3.08}O_{11}(OH)_2 \bullet 1.32H_2O.$ 

Polymorphism & Series: Forms two series, with julgoldite-(Fe<sup>2+</sup>), and with pumpellyite-(Mg).

Mineral Group: Pumpellyite group.

Occurrence: In the contact zone around an intrusive.

Association: Prehnite, babingtonite, clinopyroxene, calcite.

Distribution: From near Noril'sk, western Siberia, Russia.

Name: For its membership in the *pumpellyite* group and dominant ferrous iron content.

Type Material: n.d.

**References:** (1) Zolotukhin, V.V., Y.R. Vasil'yev, and N.I. Zyuzin (1965) Iron-rich pumpellyite from the Noril'sk district and a new diagram for pumpellyites. Doklady Acad. Nauk SSSR, 165, 1156–1159 (in Russian). (2) Passaglia, E. and G. Gottardi (1973) Crystal chemistry and nomenclature of pumpellyites and julgoldites. Can. Mineral., 12, 219–223. (3) (1976) Amer. Mineral., 61, 176–177 (abs. ref. 2). (4) Deer, W.A., R.A. Howie, and J. Zussman (1986) Rock-forming minerals, (2nd edition), v. 1B, disilicates and ring silicates, 201–247.