Ferro-gedrite $(Fe^{2+},Mg)_2[(Fe^{2+},Mg)_3Al_2](Si_6Al_2)O_{22}(OH)_2$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As prismatic to bladed crystals; also fibrous.

Physical Properties: *Cleavage:* Perfect on {210}, intersecting at 54° and 126°. *Tenacity:* Brittle. Hardness = 5.5–6 D(meas.) = 3.566 D(calc.) = 3.562

Optical Properties: Transparent to translucent. *Color:* Gray, brown. *Luster:* [Vitreous.] *Optical Class:* Biaxial (–). *Pleochroism:* X = pale green; Y = brownish green; Z = greenish blue. *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r < v$. $\alpha = 1.690$–1.695 $\beta = 1.705$–1.710 $\gamma = 1.718$–1.725 2V(meas.) = ∼82°

Cell Data: *Space Group: Pnma.* $a = 18.514$ $b = 17.945$ $c = 5.315$ Z = 4

X-ray Powder Pattern: Mt. Yakushi, Japan.
8.23 (100), 3.043 (75), 3.221 (20), 8.95 (12), 4.632 (10), 2.679 (10), 2.581 (10)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	38.41	36.53	CaO	0.03	0.11
TiO_2	0.48	0.07	Na_2O	1.16	2.06
Al_2O_3	19.72	18.80	K_2O	0.04	0.00
Fe_2O_3	2.21		F	0.13	
FeO	33.54	39.18	H_2O^+	2.06	
MnO	2.30	0.42	$-O = F_2$	0.06	
MgO	0.03	0.30	Total	[100.05]	97.47

(1) Mt. Yakushi, Japan; adjusted for removal of estimated 6% chamosite contamination, original total given as 99.92%; corresponds to $(Fe^{2+}_{4.40}Na_{0.33}Mn_{0.31}Mg_{0.01}K_{0.01})_{\Sigma=5.06}(Al_{1.68}Fe^{3+}_{0.35}Ti_{0.06})_{\Sigma=2.09}(Si_{6.03}Al_{1.97})_{\Sigma=8.00}O_{22}[(OH)_{2.15}F_{0.06}]_{\Sigma=2.21}$. (2) Kawai mine, Japan; by electron microprobe.

Polymorphism & Series: Forms a series with magnesio-gedrite and gedrite.

Mineral Group: Amphibole (Fe–Mn–Mg) group; $Mg/(Mg + Fe^{2+}) < 0.10$; $(Ca + Na)_B < 1.34$; Li < 1.0; Si < 7.0.

Occurrence: In contact metamorphosed pelitic rocks.

Association: Chamosite, chlorite, andalusite, cordierite, garnet, muscovite, biotite, spinel, quartz, labradorite, magnetite, graphite.

Distribution: On Mt. Yakushi, Miyamori district, Kitakami Mountainland, Iwate Prefecture, and in the Kawai mine, Ena, Gifu Prefecture, Japan. From Fiskenæsset, Greenland. At Turbeoshov, Shuyeverskoya, Karelia. From Spitzenberg, Harz Mountains, Germany.

Name: For *ferrous* iron in its composition and similarity to *gedrite*.

Type Material: n.d.

References: (1) Seki, Y. and M. Yamasaki (1957) Aluminian ferroanthophyllite from the Kitakami Mountainland, northeastern Japan. Amer. Mineral., 42, 506–520. (2) Matsubara, S., A. Kato, and M. Nomura (1979) The occurrence of ferrogedrite from the Kawai mine, Ena, Gifu Prefecture, Japan. Bull. National Science Museum, Tokyo, Ser. C, Geol., 6, 107–113. (3) (1982) Mineral. Abs., 33, 298 (abs. ref. 2). (4) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 223–225.