Ferropargasite $\mathbf{NaCa_2[(Fe^{2+},Mg)_4Al](Si_6Al_2)O_{22}(OH)_2}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As homoaxial intergrowths with grunerite. *Twinning:* [Simple or multiple twinning ∥ {100}.]

Physical Properties: *Cleavage:* [Perfect on {110}, with intersections at ∼56° and ∼124°; partings on {100}, {001}.] *Tenacity:* [Brittle.] Hardness = 5–6 D(meas.) = n.d. D(calc.) = 3.44 (synthetic ferro-pargasite).

Optical Properties: Semitransparent. *Color:* Bluish green in thin section.
Luster: [Vitreous.]
Optical Class: Biaxial (–). *Pleochroism:* Moderate. $\alpha = 1.700$ $\beta = 1.713$ $\gamma = 1.718$
2V(meas.) = n.d.

Cell Data: *Space Group:* $C2/m$. $a = 9.953(5)$ (synthetic ferro-pargasite). $b = 18.152(3)$ $c = 5.330(2)$ $\beta = 105.3(1)°$ Z = 2

X-ray Powder Pattern: Synthetic ferro-pargasite.
8.50 (100), 3.15 (80), 2.718 (60), 2.607 (40), 2.57 (35), 3.40 (25), 2.36 (25)

Chemistry:

	(1)
SiO_2	38.65
Al_2O_3	16.50
FeO	27.75
MnO	0.39
MgO	2.03
CaO	10.30
Na_2O	1.80
K_2O	0.50
Total	97.92

(1) Flowerdale, Scotland; by electron microprobe, corresponds to $(Na_{0.55}K_{0.10})_{\Sigma=0.65}Ca_{1.73}(Fe^{2+}_{3.65}Mg_{0.48}Mn_{0.05})_{\Sigma=4.18}Al_{1.13}(Si_{6.07}Al_{1.93})_{\Sigma=8.00}O_{22}(OH)_2$.

Polymorphism & Series: Forms a series with pargasite.

Mineral Group: Amphibole (calcic) group: $Mg/(Mg + Fe^{2+}) < 0.3$; Fe^{3+} Al^{vi}; $(Na + K)_A \geq 0.5$; $Na_B < 0.67$; $(Ca + Na)_B \geq 1.34$; $Si < 6.25$; $Ti < 0.5$.

Occurrence: In an amphibolite facies metamorphosed banded iron formation.

Association: Grunerite, almandine, biotite, ferroan clinochlore, magnetite, quartz.

Distribution: From Flowerdale, near Gairloch, Scotland.

Name: For its high *ferrous* iron content and relation to *pargasite*.

Type Material: n.d.

References: (1) Williams, P.J. (1986) Petrology and origin of iron-rich silicate-magnetite-quartz rocks from Flowerdale near Gairloch, Wester Ross. Scottish J. Geol., 22, 1–12. (2) Gilbert, M.C. (1966) Synthesis and stability relationships of ferropargasite. Amer. J. Sci., 264, 698–742. (3) Charles, R.W. (1980) Amphiboles on the join pargasite-ferropargasite. Amer. Mineral., 65, 996–1001.