Magnesiocarpholite $MgAl_2Si_2O_6(OH)_4$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As small acicular to fibrous crystals elongated ‖ [001], to 5 cm; as crystal aggregates.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.84–2.92

Optical Properties: Transparent. *Color:* Light green to grayish; in transmitted light, colorless.
Optical Class: Biaxial. $n = 1.59–1.60$ 2V(meas.) = n.d.

Cell Data: *Space Group: Ccca.* $a = 13.714(2)$ $b = 20.079(2)$ $c = 5.105(1)$ Z = [8]

X-ray Powder Pattern: Vanoise massif, France.
5.66 (100), 5.02 (45), 2.59 (45), 3.42 (25), 2.99 (25), 2.73 (18), 1.89 (15)

Chemistry:

	(1)	(2)
SiO_2	38.66	39.9
TiO_2	1.03	0.15
Al_2O_3	28.95	33.1
Fe_2O_3	2.88	0.16
FeO	6.08	4.76
MnO	0.0	0.05
MgO	9.10	10.51
CaO	0.29	< 0.02
Na_2O	0.09	< 0.03
K_2O	0.18	< 0.01
H_2O	11.73	10.5
P_2O_5	0.30	< 0.02
Total	99.29	99.13

(1) Vanoise massif, France; corresponds to $(Mg_{0.7}Fe^{2+}_{0.3})_{\Sigma=1.0}(Al_{1.95}Fe^{3+}_{0.05})_{\Sigma=2.00}Si_2O_6(OH)_4$.
(2) Sfinari, Crete, Greece; by XRF and AA, Fe^{2+} by oxidimetry, H_2O by the Penfield method; corresponds to $(Mg_{0.80}Fe^{2+}_{0.20})_{\Sigma=1.00}(Al_{1.98}Fe^{3+}_{0.01}Ti_{0.01})_{\Sigma=2.00}Si_{2.00}O_6(OH)_4$.

Polymorphism & Series: Forms a series with ferrocarpholite.

Occurrence: In veins and in schist, quartzite, and metabauxite formed during high-pressure, low-temperature metamorphism (Vanoise, France).

Association: Chloritoid, pyrophyllite, paragonite, muscovite, diaspore, chlorite, hematite, quartz.

Distribution: From the Vanoise massif, Savoie, France. Found near Sfinari and Sisses, on Crete, Greece.

Name: As the *magnesium* analog of *carpholite*.

Type Material: n.d.

References: (1) Goffé, B., G. Goffé-Urbano, and P. Saliot (1973) Sur la présence d'une variété magnésienne de ferrocarpholite en Vanoise (Alpes françaises). Compt. Rendus Acad. Sci. Paris, 277, 1965–1968 (in French). (2) Viswanathan, K. and E. Seidel (1979) Crystal chemistry of Fe-Mg-carpholites. Contr. Mineral. Petrol., 70, 41–47. (3) (1980) Amer. Mineral., 65, 406 (abs. refs. 1 and 2). (4) Goffé, B. and P. Saliot (1977) Les associations minéralogiques des roches hyperalumineuses du Dogger de Vanoise. Leur signification dans le métamorphisme régional. Bull. Minéral., 100, 302–309 (in French with English abs.). (5) Viswanathan, K. (1981) The crystal structure of a Mg-rich carpholite. Amer. Mineral., 66, 1080–1085.