Pyroaurite $Mg_6Fe_2^{3+}(CO_3)(OH)_{16}\cdot 4H_2O$

Crystal Data: Hexagonal. *Point Group:* $\overline{3}\ 2/m$. Thin to thick crystals, tabular {0001}, commonly overgrowing sjögrenite in parallel; in fibrous mats.

Physical Properties: *Cleavage:* Perfect on {0001}. *Tenacity:* Laminae flexible, not elastic. Hardness = 2.5 D(meas.) = 2.13(1) D(calc.) = 2.102

Optical Properties: Transparent. *Color:* Pale yellow, pale brown, green, colorless; colorless in transmitted light. *Luster:* Waxy to vitreous, may be pearly.
Optical Class: Uniaxial (–); may be biaxial due to strain. *Pleochroism:* O = pale yellow, brown, pink; E = colorless. $\omega = 1.564(3)$ $\epsilon = 1.543(3)$ 2V(meas.) = Small.

Cell Data: *Space Group:* $R\overline{3}m$. $a = 3.1094(2)$ $c = 23.4117(9)$ Z = 3/8

X-ray Powder Pattern: Canada; indistinguishable from desautelsite.
7.6 (10), 3.89 (7), 1.981 (5), 2.62 (4), 2.33 (4), 1.556 (2), 1.526 (2)

Chemistry:

	(1)	(2)
SiO_2	0.41	
Al_2O_3	0.11	
Fe_2O_3	23.19	24.13
FeO	0.10	
MnO	0.28	
MgO	35.44	36.55
H_2O^+	33.62	32.67
CO_2	7.01	6.65
Total	100.16	100.00

(1) Långban, Sweden; mixture of pyroaurite and sjögrenite. (2) $Mg_6Fe_2(CO_3)(OH)_{16}\cdot 4H_2O$.

Polymorphism & Series: Dimorphous with sjögrenite.

Mineral Group: Hydrotalcite group.

Occurrence: In low-temperature hydrothermal veins; in serpentinite and ophiolites; an authigenic weathering product.

Association: Sjögrenite, calcite, magnesite, aragonite, hydromagnesite, artinite, dolomite, brucite, clinopyroxene, olivine, talc, phlogopite, spinel.

Distribution: From Långban and Nordmark, Värmland, Sweden. Occurs in the Val Malenco, Lombardy, the Val d'Astico, Vicenza, and the Val Ramazzo, Liguria, Italy. At Kraubath, Styria, Austria. From near Leslie, Aberdeenshire, Scotland. In Russia, in the Vozhmin massif, and in the Mir and other diamond-bearing kimberlite pipes, Sakha. From Yoshikawa, Aichi Prefecture, Japan. In Canada, found near Kilmar, Quebec; at Rutherglen, Nipissing, and in Langmuir Township, Ontario. In the USA, at Sterling Hill, Ogdensburg, Sussex Co., New Jersey; in the Hunting Hill quarry, Rockville, Montgomery Co., Maryland; in the Cedar Hill quarry, Lancaster Co., Pennsylvania; and near the Gem mine, San Benito Co., California. From Phalaborwa, Transvaal, South Africa. Several other localities are known.

Name: From the Greek for *fire* and *gold*, for the golden yellow color developed on heating.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 656–658. (2) Mumpton, F.A., H.W. Jaffe, and C.S. Thompson (1965) Coalingite, a new mineral from the New Idria serpentine, Fresno and San Benito Counties, California. Amer. Mineral., 50, 1893–1913. (3) Ingram, L. and H.W.F. Taylor (1967) The crystal structures of sjögrenite and pyroaurite. Mineral. Mag., 36, 465–479. (4) Allmann, R. (1968) The crystal structure of pyroaurite. Acta Cryst., 24, 972–977.