Mcgillite $(Mn^{2+},Fe^{2+})_8Si_6O_{15}Cl_2(OH)_8$

Crystal Data: Monoclinic, pseudohexagonal. *Point Group:* $2/m$. Massive.
Twinning: Universal, repeated about monoclinic [110] and $[\bar{1}10]$, composition plane {001}, giving pseudorhombohedral symmetry.

Physical Properties: *Cleavage:* Good on {0001}; fair on $\{10\bar{1}1\}$. Hardness = [4]
VHN = 278–330 (15 g load). D(meas.) = 2.98(4) D(calc.) = 3.071

Optical Properties: Transparent to translucent. *Color:* Light to dark pink. *Luster:* Pearly on cleavage surfaces.
Optical Class: Biaxial (–); nearly uniaxial. ϵ = 1.640–1.643 ω = 1.667–1.670
2V(meas.) = n.d.

Cell Data: *Space Group:* $C2/m$. a = 23.312(16) b = 13.459(9) c = 7.423(7)
$\beta = 105.17(2)^\circ$ Z = [4]

X-ray Powder Pattern: Sullivan mine, Canada; nearly identical with friedelite.
2.560 (100), 7.16 (70), 2.888 (60), 3.570 (40), 2.112 (40), 1.683 (40), 11.67 (20)

Chemistry:

	(1)
SiO_2	34.54
As_2O_3	< 0.1
FeO	4.85
MnO	47.76
ZnO	< 0.1
MgO	1.62
CaO	< 0.05
Cl	6.36
H_2O	[7.16]
$-O = Cl_2$	1.44
Total	[100.85]

(1) Sullivan mine, Canada; by electron microprobe, Fe^{2+}:Fe3+ by charge balance; H_2O calculated from stoichiometry; corresponding to $(Mn^{2+}_{6.95}Fe^{2+}_{0.63}Mg_{0.42})_{\Sigma=8.00}(Si_{5.93}Fe^{3+}_{0.07})_{\Sigma=6.00}[O_{14.94}(OH)_{8.21}Cl_{1.85}]_{\Sigma=25.00}$.

Occurrence: As open-space fracture fillings in a manganese-rich section of quartzite and argillite in a metamorphosed Pb–Zn orebody (Sullivan mine, Canada).

Association: Sphalerite, boulangerite, galena, jamesonite, quartz (Sullivan mine, Canada).

Distribution: In the Sullivan mine, Kimberley, Kootenay district, British Columbia, Canada. From the Kyurazawa mine, Tochigi Prefecture, Japan.

Name: For McGill University, Montreal, Quebec, Canada.

Type Material: McGill University, Montreal, RMNS3100; Royal Ontario Museum, Toronto, Canada.

References: (1) Donnay, G., M. Bétournay, and G. Hamill (1980) McGillite, a new manganous hydroxychlorosilicate. Can. Mineral., 18, 31–36. (2) (1981) Amer. Mineral., 66, 1270. (3) Ozawa, T., Y. Takéuchi, T. Takahata, G. Donnay, and J.D.H. Donnay (1983) The pyrosmalite group of minerals. II. The layer structure of mcgillite and friedelite. Can. Mineral., 21, 7–17.