Mountkeithite $(Mg,Ni)_{11}(Fe^{3+},Cr,Al)_3(SO_4,CO_3)_{3.5}(OH)_{24}\cdot 11H_2O$

Crystal Data: Hexagonal (by analogy to pyroaurite). *Point Group:* n.d. Scaly crystals, to 1 mm, in rosettes and whorllike aggregates.

Physical Properties: *Cleavage:* Perfect on {0001}. *Tenacity:* Friable. Hardness = "Soft". D(meas.) = 2.12 D(calc.) = 1.95

Optical Properties: Translucent. *Color:* White, pale pink. *Luster:* Pearly. *Optical Class:* Uniaxial (–) or biaxial (–). *Pleochroism:* Weak; white to very pale pink. *Orientation:* Length-slow. $\omega = 1.52$ $\epsilon = 1.51$ 2V(meas.) = Small.

Cell Data: *Space Group:* n.d. $a = 10.698$ $c = 22.545$ Z = 2

X-ray Powder Pattern: Mount Keith, Australia.
11.30 (10), 5.63 (8), 3.765 (6), 1.554 (5), 2.645 (4), 2.545 (4), 1.505 (3)

Chemistry:

	(1)
SO_3	14.7
CO_2	3.9
Al_2O_3	2.6
Fe_2O_3	8.3
Cr_2O_3	6.1
NiO	6.1
CuO	0.1
MgO	31.7
H_2O	30.6
Total	104.1

(1) Mount Keith deposit, Australia; by electron microprobe, average of 20 analyses, total Fe as Fe_2O_3, CO_2 and H_2O by microchemical techniques; with $(OH)^{1-}$:H_2O calculated for charge balance, then corresponds to $(Mg_{10.76}Ni_{1.12}Cu_{0.02})_{\Sigma=11.90}(Fe_{1.42}Cr_{1.10}Al_{0.71})_{\Sigma=3.23}[(SO_4)_{2.52}(CO_3)_{1.21}]_{\Sigma=3.73}(OH)_{26.07}\cdot 10.20H_2O$.

Occurrence: Rare in a vein in serpentinite in a disseminated nickel sulfide deposit, formed by low-temperature alteration of stichtite by sulfate-rich solutions.

Association: Stichtite, morenosite, hexahydrite, pyroaurite, pyrite, magnetite, magnesite.

Distribution: From the Mount Keith nickel deposit, 400 km north-northwest of Kalgoorlie, Western Australia.

Name: For the Mount Keith deposit, Australia, in which it occurs.

Type Material: Western Australian Museum, Perth, Australia, M72.1991; The Natural History Museum, London, England.

References: (1) Hudson, D.R. and M. Bussell (1981) Mountkeithite, a new pyroaurite-related mineral with an expanded interlayer containing exchangeable $MgSO_4$. Mineral. Mag., 44, 345–350. (2) (1982) Amer. Mineral., 67, 624 (abs. ref. 1).