Silvialite $Ca_4Al_6Si_6O_{24}(SO_4)$

Crystal Data: Tetragonal. *Point Group*: 4/*m*. As grains to 3 mm, elongated along [001].

Physical Properties: *Cleavage*: Good on {100}. *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = ~5.5 D(meas.) = 2.75 D(calc.) = 2.77

Optical Properties: Transparent. *Color*: Slightly yellow. *Streak*: White. *Luster*: Subvitreous. *Optical Class*: Uniaxial (-). ω = 1.585 ε = 1.558

Cell Data: *Space Group*: *I*4/*m*. a = 12.134(2) c = 7.576(2) Z = 2

X-ray Powder Pattern: McBride Province, North Queensland, Australia.
3.45 (100), 3.07 (40), 3.82 (20), 3.04 (15), 2.69 (15), 6.03 (5), 3.49 (5)

Chemistry:

	(1)
SiO_2	45.26
Al_2O_3	26.25
Fe_2O_3	0.22
Na_2O	3.49
K_2O	0.06
CaO	16.95
SrO	0.08
Cl	0.02
SO_3	4.82
CO_2	[1.92]
Total	99.08

(1) McBride Province, North Queensland, Australia; electron microprobe analysis, CO_2 calculated by charge-balance using CO^{2+}_3 = [(Na+K) + 2(Ca+Fe+Sr) - Al - Cl - 2S]/2; corresponds to $(Na_{1.06}Ca_{2.86})(Al_{4.87}Si_{7.13})O_{24}[(SO_4)_{0.57}(CO_3)_{0.41}]$.

Polymorphism & Series: Solid-solution series with meionite.

Mineral Group: Scapolite group.

Occurrence: In granulite facies metamorphic rocks, in mafic and ultramafic xenoliths from the lower crust or upper mantle, and in anorthosites in a meteorite-impact structure.

Association: Plagioclase (An_{45}), calcic amphibole, clinopyroxene, garnet, spinel with exsolved ilmenite (McBride Province).

Distribution: In the McBride Province, North Queensland, Australia [TL]. In the Manicouagan meteorite-impact structure.

Name: Honors *Silvia* Hillebrand, daughter of Tschermak, the second 'l' in the name added to the conventional 'ite' ending to denote a mineral name, hence silvialite instead of 'silviaite'

Type Material: Systematic Reference Series, National Mineral Collection, Geological Survey of Canada, Ottawa, Ontario (NMC 68080).

References: (1) Teertstra, D.K., M. Schindler, B.L. Sherriff, and F.C. Hawthorne (1999) Silvialite, a new sulfate-dominant member of the scapolite group with an Al-Si composition near the *I*4/*m*-*P*4$_2$/*n* phase transition. Mineral. Mag., 63(3), 321-329. (2) (2000) Amer. Mineral., 85, 264 (abs. ref. 1).