Ernstburkeite $Mg(CH_3SO3)_2 \cdot 12H_2O$

Crystal Data: Hexagonal. *Point Group*: 3. As irregular grains to 5 μm.

Physical Properties: *Cleavage*: None; good parting. *Fracture*: Conchoidal. *Tenacity*: Sectle. Hardness = < 2 D(meas.) = n.d. D(calc.) = 1.364 Easily soluble in water.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Waxy. *Optical Class*: Uniaxial (+). ω = 1.402(1) ε = 1.408(1)

Cell Data: *Space Group*: *R*3 (synthetic $Mg(CH_3SO_3)_2 \cdot 12H_2O$). *a* = 9.27150(8) *c* = 21.1298(4) Z = 3

X-ray Powder Pattern: Calculated pattern.
4.64 (100), 3.87 (89), 3.87 (69), 4.41 (44), 7.04 (42), 6.39 (39), 3.74 (35)

Chemistry:

	(1)
Mg	5.64
C	5.58
S	4.89
H	7.03
O	66.86
Total	100.00

(1) $Mg(CH_3SO_3)_2 \cdot 12H_2O$; the composition of natural material confirmed by ion chromatography and Raman spectroscopy.

Occurrence: As solid inclusions in an ice core (from a depth of 576.5 m), presumably formed by the fixation of CH_3SO_3H on alkaline particles of marine or continental origin during long-range aerosol transport to the polar region.

Association: Gypsum, ice.

Distribution: Beneath the Dome Fuji station, East Antarctica, near the summit of the eastern Dronning Maud Land plateau.

Name: Honors Ernst A.J. Burke (b. 1943), Vrije Universiteit Amsterdam, Netherlands, for his contributions to the mineralogy of opaque minerals and Raman spectrometry of fluid inclusions.

Type Material: In a cold room (at -50° C), Institute of Low Temperature Science, Hokkaido University, Sapporo, Japan (81,616).

References: (1) Güner, F.E.G., T. Sakurai, and T. Hondoh (2013) Ernstburkeite, $Mg(CH_3SO_3)_2 \cdot 12H_2O$, a new mineral from Antarctica. European Jour. Mineral., 25, 79-84. (2) (2014) Amer. Mineral., 99, 1513-1514 (abs. ref. 1). (3) Genceli, F.E., M. Lutz, T. Sakurai, A.L. Spek, and T. Hondoh (2010) Crystallization and characterization of magnesium methanesulfonate hydrate $Mg(CH_3SO_3)_2 \cdot 12H_2O$. Crystal Growth & Design, 10, 4327-4333.