

**Crystal Data:** Hexagonal. *Point Group:* 3. As irregular grains to 5  $\mu$ m.

**Physical Properties:** *Cleavage:* None; good parting. *Fracture:* Conchoidal. *Tenacity:* Sectile. 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 (+).  $\omega = 1.402(1)$   $\varepsilon = 1.408(1)$

**Cell Data:** *Space Group:* R3 (synthetic Mg(CH<sub>3</sub>SO<sub>3</sub>)<sub>2</sub>·12H<sub>2</sub>O).  $a = 9.27150(8)$   $c = 21.1298(4)$   $Z = 3$

**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)

<b>Chemistry:</b>	(1)
Mg	5.64
C	5.58
S	4.89
H	7.03
<u>O</u>	<u>66.86</u>
Total	100.00

(1) Mg(CH<sub>3</sub>SO<sub>3</sub>)<sub>2</sub>·12H<sub>2</sub>O; 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<sub>3</sub>SO<sub>3</sub>H 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<sub>3</sub>SO<sub>3</sub>)<sub>2</sub>·12H<sub>2</sub>O, 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<sub>3</sub>SO<sub>3</sub>)<sub>2</sub>·12H<sub>2</sub>O. *Crystal Growth & Design*, 10, 4327-4333.