

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As irregular grains to 0.6 mm.

**Physical Properties:** *Cleavage:* Good on {001} and {100}. *Tenacity:* n.d. *Fracture:* n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.34

**Optical Properties:** Transparent. *Color:* Colorless. *Streak:* n.d. *Luster:* n.d. *Optical Class:* Biaxial (-).  $\alpha = 1.595(2)$   $\beta = 1.648(2)$   $\gamma = 1.656(2)$   $2V(\text{meas.}) = 40(2)^\circ$   $2V(\text{calc.}) = 41^\circ$  *Orientation:*  $X // b$ ,  $Z \wedge a \approx 55^\circ$ .

**Cell Data:** *Space Group:* P2<sub>1</sub>/c.  $a = 5.9305(7)$   $b = 4.7583(6)$   $c = 10.2566(10)$   $\beta = 90.663(9)^\circ$   $Z = 2$

**X-Ray Diffraction Pattern:** Brattnevet, Larsemann Hills, Prydz Bay, East Antarctica. 3.84 (100), 2.44 (73), 2.51 (72), 3.48 (52), 2.77 (46), 2.26 (45), 5.92 (42)

Chemistry:	(1)	(2)
SiO <sub>2</sub>	0.32	0.02
P <sub>2</sub> O <sub>5</sub>	47.32	47.49
Al <sub>2</sub> O <sub>3</sub>	0.05	0.01
MgO	30.35	25.10
MnO	0.15	3.64
FeO	20.99	23.58
NiO		0.16
CaO	0.35	0.01
F	0.02	
Cl	0.01	
Total	99.54	100.04

(1) Brattnevet, Larsemann Hills, Prydz Bay, East Antarctica; average electron microprobe analysis; corresponds to Ca<sub>0.02</sub>Mg<sub>2.20</sub>Fe<sub>0.86</sub>Mn<sub>0.01</sub>Si<sub>0.02</sub>P<sub>1.95</sub>O<sub>8</sub>. (2) Graves Nunataks meteorite; average electron microprobe analysis, total includes Na<sub>2</sub>O + K<sub>2</sub>O = 0.04; corresponds to Mg<sub>1.860</sub>Fe<sub>0.980</sub>Ni<sub>0.006</sub>Mn<sub>0.153</sub>Si<sub>0.001</sub>P<sub>1.998</sub>O<sub>8</sub>.

**Polymorphism & Series:** Complete solid solution with sarcopside. Polymorph of farringtonite.

**Occurrence:** In a granulite facies paragneiss (East Antarctica). In a transitional acapulcoite meteorite affected by shock metamorphism.

**Association:** Fluorapatite, quartz, wagnerite-*Ma5bc*, xenotime-(Y), stornesite-(Y), P-bearing K-feldspar and plagioclase, Ti-rich biotite, sillimanite, orthopyroxene, sapphirine, hercynite, corundum (Brattnevet); sarcopside, chladniite-johnsomervilleite, farringtonite (Graves Nunataks).

**Distribution:** From Brattnevet, Larsemann Hills, Prydz Bay, East Antarctica [TL]. In the meteorite Graves Nunataks (GRA) 95209.

**Name:** Honors Christian *Chopin* (b. 1955) of the Ecole Normale Supérieure, Paris, France, for his contributions to the mineralogy of phosphates.

**Type Material:** Mineralogy Museum, School of Mines, Paris, France (M 73096).

**References:** (1) Grew, E.S., T. Armbruster, O. Medenbach, M.G. Yates, and C.J. Carson (2007) Chopinite, [(Mg,Fe)<sub>3</sub>□](PO<sub>4</sub>)<sub>2</sub>, a new mineral isostructural with sarcopside, from fluorapatite segregation in granulite-facies paragneiss, Larsemann Hills, Prydz Bay, East Antarctica. *Eur. J. Mineral.*, 19, 229-245. (2) Grew, E.S., M.G. Yates, R.J. Beane, C. Floss, and C. Gerbi (2010) Chopinite-sarcopside solid solution, [(Mg,Fe)<sub>3</sub>□](PO<sub>4</sub>)<sub>2</sub>, in GRA95209, a transitional acapulcoite; Implications for phosphate genesis in meteorites. *Amer. Mineral.*, 95, 260-272. (3) (2008) *Amer. Mineral.*, 96, 252 (abs. ref. 1).