Gerstmannite $(Mg, Mn^{2+})_2Zn(SiO_4)(OH)_2$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As mats and sprays of bunched prismatic crystals, to 1 cm; as single crystals typically bounded by {100}, {010}, {110}, lacking terminations.

Physical Properties: *Cleavage:* Good on {010}. Hardness = 4.5 D(meas.) = 3.68(2) D(calc.) = 3.66

Optical Properties: Translucent to opaque. *Color:* White to very pale pink. *Streak:* White. *Luster:* Vitreous to subadamantine, silky when matted.
Optical Class: Biaxial (–). *Orientation:* $X = b$; $Y = c$; $Z = a$. $\alpha = 1.665(2)$ $\beta = 1.675(2)$ $\gamma = 1.678(2)$ 2V(meas.) = 50°–60°

Cell Data: *Space Group: Bbcm*. $a = 8.185(7)$ $b = 18.65(2)$ $c = 6.256(6)$ Z = 8

X-ray Powder Pattern: Sterling Hill, New Jersey, USA.
2.598 (100), 9.326 (85), 3.418 (80), 2.758 (75), 2.332 (75), 2.983 (60), 4.806 (50)

Chemistry:

	(1)	(2)	(3)	(4)
SiO_2	23.9	23.2		22.84
FeO	0.06			
MnO	22.1	21.1		20.22
ZnO	31.7	29.6		30.94
MgO	16.6	19.5		19.15
Na_2O	0.04			
H_2O			4.12	6.85
Total	94.4	93.4		100.00

(1) Sterling Hill, New Jersey, USA; after deducting 3.93% of calcite as $CaCO_3$. (2) Do.; by electron microprobe. (3) Do.; H_2O by Penfield method. (4) $(Mg_{1.25}Mn_{0.75})_{\Sigma=2.00}ZnSiO_4(OH)_2$.

Occurrence: In a hydrothermal vein cutting franklinite-willemite ore in a metamorphosed stratiform zinc orebody.

Association: Calcite, manganpyrosmalite, sphalerite.

Distribution: From Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA.

Name: For Ewald Gerstmann (1918–), mineral collector of Franklin, New Jersey, USA.

Type Material: Harvard University, Cambridge, Massachusetts, 126484; National Museum of Natural History, Washington, D.C., USA, 135926, 137021.

References: (1) Moore, P.B. and T. Araki (1977) Gerstmannite, a new zinc silicate mineral and a novel cubic close-packed oxide structure. Amer. Mineral., 62, 51–59.