Samfowlerite $Ca_{14}Mn_3Zn_2(Be,Zn)_2Be_6(SiO_4)_6(Si_2O_7)_4(OH,F)_6$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As crystals, to 0.05 mm, and in groups.

Physical Properties: Hardness = <3. D(meas.) = 3.28(5) D(calc.) = 3.29–3.31 Weakly fluoresces red under SW and LW UV.

Optical Properties: Semitransparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $Y = b$; $X \wedge a = 44°$; $Z \wedge c = 29°$. $\alpha = 1.674(3)$ $\beta = 1.680(3)$ $\gamma = 1.681(3)$ 2V(meas.) = 29.0(1)°

Cell Data: *Space Group:* $P2_1/c$. $a = 9.068(2)$ $b = 17.992(2)$ $c = 14.586(2)$ $\beta = 104.86(1)°$ Z = 2

X-ray Powder Pattern: Franklin, New Jersey, USA.
2.863 (100), 2.653 (50), 2.388 (50), 2.771 (40), 2.272 (30), 1.832 (30), 2.329 (20)

Chemistry:

	(1)
SiO_2	36.9
MnO	9.3
ZnO	9.5
BeO	5.6
MgO	0.2
CaO	34.1
F	1.0
H_2O	[3.8]
$-O = F_2$	0.4
Total	[100.0]

(1) Franklin, New Jersey, USA; by electron microprobe, Be and F by ion microprobe, H_2O by difference; crystal structure analysis indicates that Be is lower and H_2O is higher than reported; corresponding to $(Ca_{13.9}Mg_{0.1})_{\Sigma=14.0}Mn_{3.0}Zn_{2.6}Be_{5.1}Si_{14.0}O_{56.5}H_{9.6}F_{1.2}$.

Occurrence: In vugs in granular willemite-franklinite-andradite ore from a metamorphosed stratiform Zn–Mn deposit.

Association: Andradite-grossular, cahnite, clinochlore, leucophoenicite, johnbaumite, barite, franklinite, willemite.

Distribution: From Franklin, Sussex Co., New Jersey, USA.

Name: For Samuel Fowler, M.D. (1779–1844), who early encouraged study of the Franklin deposits.

Type Material: National Museum of Natural History, Washington, D.C., USA, M04254.

References: (1) Rouse, R.C., D.R. Peacor, P.J. Dunn, S.-C. Su, P.H. Chi, and H. Yeates (1994) Samfowlerite, a new Ca Mn Zn beryllosilicate mineral from Franklin, New Jersey: its characterization and crystal structure. Can. Mineral., 32, 43–53.