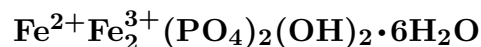


Ferrostrunzite

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Crystal Data: Triclinic, pseudomonoclinic. *Point Group:* $\bar{1}$ or 1. Crystals are prismatic, flattened \parallel {100}, elongated along [001], to 6 mm, commonly fibrous in divergent aggregates. *Twinning:* By reflection across {110}.

Physical Properties: *Cleavage:* One nearly \parallel to elongation; one $\simeq \perp$ optic normal; one \perp Bxa. *Fracture:* Very brittle. Hardness = ~ 4 D(meas.) = 2.50 D(calc.) = 2.57

Optical Properties: Semitransparent. *Color:* Pale brown, colorless, white, straw-yellow, bright orange. *Streak:* Pale brown. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Pleochroism:* Faint; X = yellow-green; Z = orange. *Orientation:* $Z \wedge c \simeq 3^\circ\text{--}8^\circ$. *Dispersion:* Moderate, asymmetric. *Absorption:* Minimum \parallel Z. $\alpha = 1.628(2)$ $\beta = [1.682]$ $\gamma = 1.723(4)$ $2V(\text{meas.}) = 80(5)^\circ$

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 10.17\text{--}10.23$ $b = 9.77\text{--}9.78$ $c = 7.37\text{--}7.40$
 $\alpha = 88.63^\circ\text{--}89.65^\circ$ $\beta = 97.60^\circ\text{--}98.28^\circ$ $\gamma = 117.26^\circ\text{--}117.60^\circ$ $Z = 2$

X-ray Powder Pattern: Mullica Hill, New Jersey, USA; nearly identical to strunzite. 5.29 (100), 8.94 (80), 3.277 (40), 4.47 (30), 3.452 (30), 3.213 (30), 4.33 (20)

Chemistry:	(1)	(2)	(3)
P ₂ O ₅	28.1	29.91	28.41
Fe ₂ O ₃ + FeO		43.17	
Fe ₂ O ₃	30.9		31.97
FeO	13.9		14.38
MnO	trace	0.06	
H ₂ O	[27.1]	27.5	25.24
Total	[100.0]	100.7	100.00

(1) Mullica Hill, New Jersey, USA; by electron microprobe, H₂O by difference, Fe²⁺:Fe³⁺ estimated at 1:2 from microchemical tests and the known isostructural strunzite formula; corresponds to Fe_{0.98}²⁺Fe_{1.96}³⁺(PO₄)₂(OH)_{1.84}•6.68H₂O. (2) Bethel Church, Indiana, USA; by electron microprobe, H₂O by TGA; assuming Fe²⁺:Fe³⁺ = 1:2, then corresponds to Fe_{0.95}²⁺Fe_{1.9}³⁺(PO₄)₂(OH)_{1.84}•6H₂O. (3) Fe²⁺Fe₂³⁺(PO₄)₂(OH)₂•6H₂O.

Occurrence: Replacing a belemnite (Mullica Hill, New Jersey, USA); a secondary mineral in weathered phosphatic black shale beds (Bethel Church, Indiana, USA).

Association: Rockbridgeite, phosphosiderite (Mullica Hill, New Jersey, USA); vivianite, aluminian strengite, diadochite, leucophosphite, beraunite, fluorapatite (Bethel Church, Indiana, USA); beraunite, cacoxenite (Arnsberg, Germany).

Distribution: In the USA, along Raccoon Creek, near Mullica Hill, Gloucester Co., New Jersey; near Bethel Church, Pike Co., Indiana; in the Dunton quarry, Newry, Oxford Co., Maine; from the Palermo #1 mine, near North Groton, Grafton Co., New Hampshire. In the Gravel Hill mine, Perranzabuloe, Cornwall, England. At Arnsberg, North Rhein-Westphalia, and Althütte and Waidhaus, Bavaria, Germany. Along Dry Weather road, Glenhope, New Zealand.

Name: For its dominant content of ferrous iron and relation to *strunzite*.

Type Material: National Museum of Natural History, Washington, D.C., USA, 149594.

References: (1) Peacor, D.R., P.J. Dunn, and W.B. Simmons (1983) Ferrostrunzite, the ferrous iron analogue of strunzite from Mullica Hill, New Jersey. *Neues Jahrb. Mineral., Monatsh.*, 524–528. (2) (1984) *Amer. Mineral.*, 69, 811 (abs. ref. 1). (3) Coveney, R.M., Jr., A.V. Allen, J.C. Blankenship, and W.B. Simmons (1984) Hawleyite and phosphate minerals from Bethel Church, Indiana, including a second occurrence for ferrostrunzite. *Mineral. Record*, 15, 351–357. (4) van Tassel, R. and E. de Grave (1992) Ferrostrunzite from Arnsberg, Sauerland, Germany. *Neues Jahrb. Mineral., Monatsh.*, 207–212.

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