

## Clinoferrosilite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . As acicular crystals lacking terminal faces. *Twinning:* On {100}.

**Physical Properties:** *Cleavage:* [Good on {110}, (110)  $\wedge$  (1 $\bar{1}$ 0)  $\sim 87^\circ$ ] (by analogy to ferrosilite). *Hardness* = [5–6] *D*(meas.) = n.d. *D*(calc.) = 4.068

**Optical Properties:** Semitransparent. *Color:* Colorless with slight amber tint. *Optical Class:* Biaxial (+). *Orientation:*  $Z \wedge c = 31^\circ$ .  $\alpha = 1.764(2)$  (synthetic  $\text{Fe}_2\text{Si}_2\text{O}_6$ ).  $\beta = 1.767(2)$   $\gamma = 1.792(2)$   $2V$ (meas.) =  $25(5)^\circ$

**Cell Data:** *Space Group:*  $P2_1/c$  (synthetic  $\text{Fe}_2\text{Si}_2\text{O}_6$ ).  $a = 9.7085$   $b = 9.0872$   $c = 5.2284$   
 $\beta = 108.432^\circ$   $Z = 4$

**X-ray Powder Pattern:** Synthetic  $\text{Fe}_2\text{Si}_2\text{O}_6$ .  
3.035 (100), 2.603 (63), 2.909 (55), 2.408 (53), 2.161 (51), 4.605 (49), 3.234 (40)

**Chemistry:** (1) Material from Lake Naivasha, Kenya, approximates  $(\text{Fe}_{1.90}\text{Mn}_{0.10})_{\Sigma=2.00}\text{Si}_2\text{O}_6$ , with Mg, Al, Ca, Ti, V, Cr, Co, and Ni absent.

**Polymorphism & Series:** Dimorphous with ferrosilite; forms a series with clinoenstatite.

**Mineral Group:** Pyroxene group.

**Occurrence:** As acicular crystals in lithophysae in obsidian (Lake Naivasha, Kenya).

**Association:** Anorthoclase, magnetite, cristobalite, fayalite, biotite (Lake Naivasha, Kenya).

**Distribution:** From near Lake Naivasha, Rift Valley, Kenya. In the USA, from the Coso Mountains, Inyo Co., California; and at Obsidian Cliffs, Yellowstone National Park, Wyoming. From Hrafninnuhryggur, Iceland.

**Name:** For its monoclinic crystal system and chemical identity with *ferrosilite*.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 102793.

**References:** (1) Deer, W.A., R.A. Howie, and J. Zussman (1978) Rock-forming minerals, (2nd edition), v. 2A, single-chain silicates, 20–161. (2) Bowen, N.L. (1935) Ferrosilite as a natural mineral. *Amer. J. Sci.*, 30, 481–494. (3) (1936) *Amer. Mineral.*, 21, 678 (abs. ref. 2). (4) Lindsley, D.H., B.T.C. Davis, and I.D. MacGregor (1964) Ferrosilite ( $\text{FeSiO}_3$ ): synthesis at high pressures and temperatures. *Science*, 144, 73–74. (5) Bown, M.G. (1965) Re-investigation of clinoferrosilite from Lake Naivasha, Kenya. *Mineral. Mag.*, 34, 66–70.