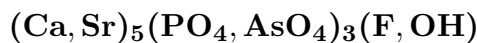


**Fermorite**

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**Crystal Data:** Monoclinic, pseudo-hexagonal. *Point Group:*  $2/m$ . Crudely prismatic, massive, granular.**Physical Properties:** *Fracture:* Uneven. Hardness = 5 D(meas.) = 3.518 D(calc.) = [3.41]**Optical Properties:** Translucent. *Color:* Pale pinkish white to white. *Streak:* White. *Luster:* Greasy.*Optical Class:* Uniaxial (-).  $n = \sim 1.66$ **Cell Data:** *Space Group:*  $P2_1/m$ , pseudo- $P6_3/m$ .  $a = 9.55$   $c = 6.98$   $Z = 2$ **X-ray Powder Pattern:** Sitapar, India.

2.86 (10), 2.75 (6), 3.49 (5), 1.971 (4), 1.867 (4), 3.95 (3), 3.12 (3)

**Chemistry:**

|                          |        |
|--------------------------|--------|
|                          | (1)    |
| $\text{P}_2\text{O}_5$   | 20.11  |
| $\text{As}_2\text{O}_5$  | 25.23  |
| CaO                      | 44.34  |
| SrO                      | 9.93   |
| F                        | 0.83   |
| $\text{H}_2\text{O}$     | trace  |
| insol.                   | 0.08   |
| $-\text{O} = \text{F}_2$ | 0.35   |
| Total                    | 100.17 |

(1) Sitapar, India; F determination probably low; corresponds to  $(\text{Ca}_{4.46}\text{Sr}_{0.54})_{\Sigma=5.00}[(\text{PO}_4)_{1.60}(\text{AsO}_4)_{1.24}]_{\Sigma=2.84}(\text{F, OH})$ . (2) Do.; by electron microprobe, corresponds to  $(\text{Ca}_{4.20}\text{Sr}_{0.80})_{\Sigma=5.00}[(\text{PO}_4)_{1.45}(\text{AsO}_4)_{1.48}]_{\Sigma=2.93}[(\text{OH})_{0.66}(\text{F}_{0.34})]_{\Sigma=1.00}$ .

**Mineral Group:** Apatite group.**Occurrence:** A rare mineral in veinlets through a manganese deposit.**Association:** Braunite, hollandite, pyrolusite.**Distribution:** From Sitapar, Chhindwara district, Madhya Pradesh, India.**Name:** Honors Dr. Lewis Leigh Fermor (1880–1954), former Director of the Geological Survey of India.**Type Material:** National Museum of Natural History, Washington, D.C., USA, 94809.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 904. (2) Hughes, J.M. and J.W. Drexler (1991) Cation substitution in the apatite tetrahedral site: crystal structures of type hydroxyllestadite and type fermorite. Neues Jahrb. Mineral., Monatsh., 327–336. (3) Traill, R.J. and A.P. Sabina (1960) Catalogue of X-ray diffraction patterns and specimen mounts on file at the Geological Survey of Canada. Geol. Sur. of Canada, Paper 60-4, 36–37.