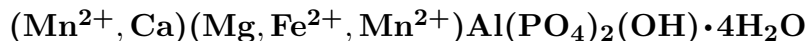


**Lun'okite**

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**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As prismatic crystals in flattened radial aggregates, to 1 mm.

**Physical Properties:** *Cleavage:* Perfect on {010}; imperfect on {001}. Hardness = 3–4 VHN = 240 (40 g load).  $D(\text{meas.}) = 2.66$   $D(\text{calc.}) = 2.69$

**Optical Properties:** Semitransparent. *Color:* Colorless to pale yellowish white. *Optical Class:* Biaxial (+). *Orientation:*  $X = c$ ;  $Y = a$ ;  $Z = b$ . *Dispersion:*  $r < v$ .  $\alpha = 1.603$   $\beta = 1.608$   $\gamma = 1.616$   $2V(\text{meas.}) = 70^\circ$

**Cell Data:** *Space Group:*  $Pbca$ .  $a = 14.95(5)$   $b = 18.71(2)$   $c = 6.96(3)$   $Z = 8$

**X-ray Powder Pattern:** Mt. Vasin-Myl'k, Russia. 2.809 (10b), 9.39 (9), 2.92 (7), 3.48 (6), 5.15 (5), 1.877 (5), 1.568 (5)

**Chemistry:**

|                                | (1)   |
|--------------------------------|-------|
| P <sub>2</sub> O <sub>5</sub>  | 35.42 |
| Al <sub>2</sub> O <sub>3</sub> | 13.42 |
| FeO                            | 5.55  |
| MnO                            | 18.97 |
| MgO                            | 3.59  |
| CaO                            | 3.21  |
| H <sub>2</sub> O               | 19.40 |
| <hr/>                          |       |
| Total                          | 99.56 |

(1) Mt. Vasin-Myl'k, Russia; by electron microprobe, total Fe as FeO, total Mn as MnO; corresponds to  $(\text{Mn}_{0.77}\text{Ca}_{0.23})_{\Sigma=1.00}(\text{Mg}_{0.35}\text{Fe}_{0.31}\text{Mn}_{0.30})_{\Sigma=0.96}\text{Al}_{1.05}(\text{PO}_4)_{1.99}(\text{OH})_{1.10} \cdot 3.78\text{H}_2\text{O}$ .

**Mineral Group:** Overite group.

**Occurrence:** In fractures and on crusts of mitridatite in granite pegmatites.

**Association:** Eosphorite, laueite, kingsmountite, fairfieldite, mitridatite.

**Distribution:** On Mt. Vasin-Myl'k, Voron'i massif, Kola Peninsula, Russia.

**Name:** For the Lun'ok River, nearby Mt. Vasin-Myl'k, Russia.

**Type Material:** Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5771; Mining Institute, St. Petersburg, 1340/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82541, 82542.

**References:** (1) Voloshin, A.V., Y.A. Pakhomovskii, and F.N. Tyusheva (1983) Lun'okite, a new phosphate, the manganese analog of overite, from granitic pegmatites of the Kola Peninsula. *Zap. Vses. Mineral. Obshch.*, 112, 232–237 (in Russian). (2) (1984) *Amer. Mineral.*, 69, 210–211 (abs. ref. 1).