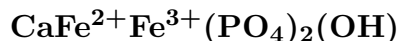


# Mélonjosephite



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**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . Crystals tabular, showing {001}, {010}, and {100}; in fibrous masses, with fibers to 1 cm.

**Physical Properties:** *Cleavage:* One, longitudinal; another, transverse. *Tenacity:* Brittle. Hardness = < 5 D(meas.) = 3.65(2) D(calc.) = 3.61

**Optical Properties:** Semitransparent. *Color:* Dark green, nearly black. *Luster:* Vitreous to resinous.

*Optical Class:* Biaxial (-). *Pleochroism:* X = deep brown with greenish tint, dark blue-green; Y = greenish brown, dark olive-brown; Z = golden yellow with greenish tint, pale brown.

*Orientation:* X = c; Y = a; Z = b. *Dispersion:* Strong.  $\alpha = 1.720\text{--}1.732$   $\beta = 1.763\text{--}1.770$   $\gamma = 1.787\text{--}1.800$   $2V(\text{meas.}) = 80^\circ\text{--}85^\circ$

**Cell Data:** *Space Group:* *Pbam*.  $a = 9.542(1)$   $b = 10.834(1)$   $c = 6.374(1)$   $Z = 4$

**X-ray Powder Pattern:** Angarf-Sud pegmatite, Morocco.

3.049 (100), 5.42 (90), 2.710 (90), 2.624 (60), 2.912 (40), 2.187 (35), 3.185 (30)

## Chemistry:

	(1)	(2)
P <sub>2</sub> O <sub>5</sub>	39.96	39.57
Al <sub>2</sub> O <sub>3</sub>	0.17	
Fe <sub>2</sub> O <sub>3</sub>	21.81	22.26
FeO	17.39	20.03
MnO	0.44	
MgO	1.18	
CaO	14.99	15.63
Li <sub>2</sub> O	0.07	
Na <sub>2</sub> O	0.48	
H <sub>2</sub> O	2.50	2.51
insol.	0.97	
Total	99.96	100.00

(1) Angarf-Sud pegmatite, Morocco; Ca and Mg by AA, Na and Li by flame photometry, H<sub>2</sub>O by the Penfield method, insoluble is quartz; corresponds to  $(\text{Ca}_{0.96}\text{Mg}_{0.11}\text{Na}_{0.06}\text{Li}_{0.02})_{\Sigma=1.15}(\text{Fe}_{0.87}^{2+}\text{Mn}_{0.02}^{2+})_{\Sigma=0.89}(\text{Fe}_{0.98}^{3+}\text{Al}_{0.02})_{\Sigma=1.00}(\text{PO}_4)_{2.01}(\text{OH})_{0.99}$ . (2)  $\text{CaFe}^{2+}\text{Fe}^{3+}(\text{PO}_4)_2(\text{OH})$ .

**Occurrence:** Replacing an alluaudite group mineral in a complex granite pegmatite (Angarf-Sud pegmatite, Morocco).

**Association:** Triphylite.

**Distribution:** From the Angarf-Sud pegmatite, Tazenakht Plain, Anti-Atlas Mountains, Morocco. At the Sandamap pegmatite, west of Usakos, Namibia.

**Name:** To honor Professor Joseph Mélon (1898–1991), Institute of Mineralogy, University of Liège, Liège, Belgium.

**Type Material:** University of Liège, Liège, Belgium, 18587; National Museum of Natural History, Washington, D.C., USA, 128338.

**References:** (1) Franolet, A.-M. (1973) La mélonjosephite,  $\text{CaFe}^{2+}\text{Fe}^{3+}(\text{PO}_4)_2(\text{OH})$ , une nouvelle espèce minérale. Bull. Soc. fr. Minéral., 96, 135–142 (in French with English abs.). (2) (1975) Amer. Mineral., 60, 946 (abs. ref. 1). (3) Kampf, A.R. and P.B. Moore (1977) Melonjosephite, calcium iron hydroxy phosphate: its crystal structure. Amer. Mineral., 62, 60–66. (4) Keller, P. (1980) Giniit,  $\text{Fe}^{2+}\text{Fe}_4^{3+}[(\text{H}_2\text{O})_2](\text{OH})_2(\text{PO}_4)_4$ , ein neues Mineral aus dem Pegmatit von Sandamab [sic] bei Usakos, Namibia. Neues Jahrb. Mineral., Monatsh., 49–56 (in German with English abs.).

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