

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . Forms masses to 1.5 cm consisting of single crystals, some showing {001} as the dominant form.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Fracture:* Uneven. *Hardness* = 2  
D(meas.) = 1.65(2) D(calc.) = 1.64

**Optical Properties:** Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous, pearly on cleavage surfaces.

*Optical Class:* Biaxial (-).  $\alpha = 1.459(1)$   $\beta = 1.470(1)$   $\gamma = 1.470(1)$   $2V(\text{meas.}) = 25(5)^\circ$   
 $2V(\text{calc.}) = 0^\circ$  *Orientation:*  $X \wedge [001] = 80^\circ$ ,  $Y \wedge [100] = 10^\circ$ ,  $Z \perp [001]$ ; optic axis plane is nearly parallel to cleavage. *Dispersion:* Weak,  $r < v$ . No pleochroism.

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 6.932(2)$   $b = 6.925(3)$   $c = 16.154(5)$   $\alpha = 82.21(4)^\circ$   
 $\beta = 89.70(4)^\circ$   $\gamma = 119.51(3)^\circ$   $Z = 1$

**X-ray Powder Pattern:** Zhelezny iron mine, Kovdor carbonatite massif, Kola Peninsula, Russia.  
7.98 (100), 5.32 (63), 3.19 (45), 2.658 (37), 2.896 (33), 2.728 (32), 2.867 (30),

<b>Chemistry:</b>	(1)
MgO	18.0
FeO	0.1
P <sub>2</sub> O <sub>5</sub>	21.5
<u>H<sub>2</sub>O</u>	<u>60.8</u>
Total	100.7

(1) Zhelezny iron mine, Kovdor carbonatite massif, Kola Peninsula, Russia.; wet chemical analysis supplemented by IR spectroscopy, H<sub>2</sub>O by weight loss at 1000 °C; corresponds to  $(\text{Mg}_{2.92}\text{Fe}_{0.01})_{\Sigma=2.93}\text{P}_{2.01}\text{O}_{7.955} \cdot 22.055\text{H}_2\text{O}$ .

**Polymorphism & Series:** Corresponds to the synthetic polytype 1A2 of  $\text{Mg}_3(\text{PO}_4)_2 \cdot 22\text{H}_2\text{O}$ .

**Occurrence:** In a dolomite carbonatite vein that cuts forsterite-magnetite ore in a carbonatite massif.

**Association:** Nastrophite, bakhchisaraitsevite, sjogrenite, magnetite, carbonate-fluorapatite.

**Distribution:** From the Zhelezny iron mine, Kovdor carbonatite massif, Kola Peninsula, Russia.

**Name:** Honors Michele Catti (b. 1945), Professor of Physical Chemistry, University of Milan Bicocca, Milan, Italy, for his contributions to the crystal chemistry of hydrated oxysalts.

**Type Material:** Mineralogical Museum, Department of Mineralogy, Saint Petersburg State University, Saint Petersburg, Russia.

**References:** (1) Britvin, S.N., G. Ferraris, G. Ivaldi, A.N. Bogdanova, and N.V. Chukanov (2002) Cattiite,  $\text{Mg}_3(\text{PO}_4)_2 \cdot 22\text{H}_2\text{O}$ , a new mineral from Zhelezny Mine (Kovdor Massif, Kola Peninsula, Russia). *Neues Jahrb. Mineral. Mon.*, 160-168. (2) (2003) *Amer. Mineral.*, 88, 1175 (abs. ref. 1). (3) Chernyatjeva A.P., S.V. Krivovichev, and S.N. Britvin (2013) The crystal structure of cattiite,  $\text{Mg}_3(\text{PO}_4)_3(\text{H}_2\text{O})_{22}$ . *Zap. Ross. Mineral. Obshch.*, 142(2), 120-128 (in Russian).