Cattiite  
\[
\text{Mg}_3(\text{PO}_4)_2\cdot22\text{H}_2\text{O}
\]

**Crystal Data:** Triclinic. Point Group: 
\[
tilde{1}.
\]
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
\[
D(\text{meas.}) = 1.65(2) \quad D(\text{calc.}) = 1.64
\]

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

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

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

**Chemistry:**
\[
\begin{array}{ll}
\text{MgO} & 18.0 \\
\text{FeO} & 0.1 \\
\text{P}_2\text{O}_5 & 21.5 \\
\text{H}_2\text{O} & 60.8 \\
\text{Total} & 100.7
\end{array}
\]

(1) Zhelezny iron mine, Kovdor carbonatite massif, Kola Peninsula, Russia.; wet chemical analysis supplemented by IR spectroscopy, \(\text{H}_2\text{O}\) by weight loss at 1000 °C; corresponds to (\(\text{Mg}_{2.92}\text{Fe}_{0.01}\))\(\Sigma=2.93\) \(\text{P}_{2.01}\) \(\text{O}_{7.955}\) \(\cdot22.055\text{H}_2\text{O}\).

**Polymorphism & Series:** Corresponds to the synthetic polytype \(1A2\) of \(\text{Mg}_3(\text{PO}_4)_2\cdot22\text{H}_2\text{O}\).

**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.