Goryainovite

\[ \text{Ca}_2(\text{PO}_4)\text{Cl} \]

**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. As rounded grains to 20 \( \mu \text{m} \) included in magnetite.

**Physical Properties:** Cleavage: None. Tenacity: Brittle. Fracture: Conchoidal. Hardness = ~4
D(meas.) = n.d. D(calc.) = 2.98 Fluoresces pale orange under SW UV.

**Optical Properties:** Transparent. Color: Colorless. Streak: White. Luster: Vitreous. Optical Class: Biaxial (-). \( \alpha = 1.650 \) \( \beta = 1.663 \) \( \gamma = 1.670 \) 2V(meas.) = 75°
Orientation: \( X = b, Y = a, Z = c \).

**Cell Data:** Space Group: Pbcm. \( a = 6.215(2) \) \( b = 7.011(2) \) \( c = 10.788(3) \) \( Z = 4 \)

**X-ray Powder Pattern:** Stora Sahavaara iron ore deposit, Norrbotten county, Sweden. 2.746 (100), 2.845 (90), 1.957 (30), 2.333 (25), 1.837 (20), 2.028 (15), 1.756 (15)

**Chemistry:**

\[
\begin{align*}
P_2\text{O}_5 & \quad 33.19 \\
\text{Cl} & \quad 16.96 \\
\text{CaO} & \quad 53.25 \\
- \text{O} = \text{Cl}_2 & \quad 3.83 \\
\text{Total} & \quad 99.57
\end{align*}
\]

(1) Stora Sahavaara iron ore deposit, Norrbotten county, Sweden; average electron microprobe analysis supplemented by Raman spectroscopy; corresponds to \( \text{Ca}_{2.01}(\text{P}_{0.99}\text{O}_{3.98})\text{Cl}_{1.01} \).

**Occurrence:** In diopside-amphibole skarn in metamorphosed greenstone, metavolcanic and metasedimentary rocks.

**Association:** Magnetite, serpentine, spinel, anhydrite, thorianite, dolomite, magnesite.

**Distribution:** At the Stora Sahavaara iron ore deposit, Norrbotten county, Sweden.

**Name:** Honors Pavel Mikhailovich Goryainov (b. 1937) of the Geological Institute of the Kola Centre of the Russian Academy of Sciences for his contribution to the knowledge of the geology and petrology of banded iron formation of the Fennoscandian Shield.

**Type Material:** Mineralogical Museum, St. Petersburg State University, Russia (19650).