Hydroxyplumbopyrochlore \((\text{Pb}_{1.5}^{\text{IV}}0.5)\text{Nb}_2\text{O}_6(\text{OH})\)

**Crystal Data:** Cubic. *Point Group:* 4/m 3 2/m. As euhedral octahedral crystals to 0.06 mm slightly modified by rhombohedra or cubes.

**Physical Properties:** *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. *Hardness:* \(\approx 5.5\) D(meas.) = n.d. \(\text{D(calc.)} = 6.474\)

**Optical Properties:** *Transparent.* *Color:* Pale yellow to pale brown. *Streak:* White. *Luster:* Adamantine. *Optical Class:* Isotropic. \(n(\text{calc.}) = 2.26(3)\)

**Cell Data:** *Space Group:* Fd\(^3\) m. *a = 10.5456(6)\) \(Z = 8\)

**X-Ray Diffraction Pattern:** Jabal Sayid granitic complex, Arabian Shield, Saudi Arabia. 3.043 (100), 1.591 (43), 2.636 (42), 1.862 (36), 1.183 (12), 6.051 (8), 1.521 (8)

**Chemistry:**

\[
\begin{array}{lcc}
\text{CaO} & 0.32 \\
\text{SrO} & 0.16 \\
\text{FeO} & 0.17 \\
\text{Ce}_2\text{O}_3 & 0.07 \\
\text{Pr}_2\text{O}_3 & 0.02 \\
\text{PbO} & 51.69 \\
\text{Nb}_2\text{O}_5 & 40.06 \\
\text{SiO}_2 & 0.05 \\
\text{TiO}_2 & 1.68 \\
\text{Ta}_2\text{O}_5 & 4.74 \\
\text{H}_2\text{O} & [0.95] \\
\text{F} & 0.0 \\
\text{Total} & 99.90.
\end{array}
\]

(1) Jabal Sayid granitic complex, Arabian Shield, Saudi Arabia; average electron microprobe analysis supplemented by Raman spectroscopy, \(\text{H}_2\text{O}\) calculated from structure; corresponds to \(\text{A}^4(\text{Pb}_{1.34}\text{Ca}_{0.03}\text{Fe}_{0.00}\text{Sr}_{0.01}\text{□}_{0.61})\text{□}_{2-2.00}\text{B}^0(\text{Nb}_{1.75}\text{Ti}_{0.12}\text{Ta}_{0.12}\text{Si}_{0.01}\text{□}_{0.39})\text{□}_{2-2.00}\text{O}_6[\text{OH}]\text{□}_{0.53}\text{O}_{0.08}\text{□}_{0.39}]\text{□}_{2-1.00}.

**Mineral Group:** Pyrochlore supergroup, pyrochlore group.

**Occurrence:** From pegmatite-aplite in a peralkaline granitic complex.

**Association:** Quartz, microcline, “biotite,” rutile, zircon, calcite, rhodochrosite, columbite-(Fe), goethite, thorite, bastnäsite-(Ce), xenotime-(Y), samarskite-(Y), euxenite-(Y), “hydropyrochlore,” fluorapatopyrochlore.

**Distribution:** From the Jabal Sayid peralkaline granitic complex, Arabian Shield, Saudi Arabia.

**Name:** The first prefix, *hydroxy,* indicates dominant OH at the Y site, the second prefix, *plumbo,* indicates the dominant lead in the A site of a member of the *pyrochlore* subgroup.

**Type Material:** Geological Museum of China, Beijing, China (M13239).