Hydropyrochlore \((\text{H}_2\text{O}, \square)\text{Nb}_2(\text{O}, \text{OH})_6(\text{H}_2\text{O})\)

**Crystal Data:** Cubic.  \textit{Point Group:} \(4/m \bar{3} 2/m\). As octahedra, to 1 cm, which may be corroded.

**Physical Properties:** \textit{Fracture:} [Uneven] (by analogy to the pyrochlore supergroup). \textit{Tenacity:} [Brittle.]  \(\text{Hardness} = 4-4.5\)  \(D(\text{meas.}) = 3.40-3.48\)  \(D(\text{calc.}) = 3.40-3.44\)

**Optical Properties:** Transparent. \textit{Color:} Greenish. \textit{Luster:} [Vitreous to resinous.]

**Chemistry:**

\[
\begin{array}{ccc}
\text{UO}_3 & 0.10 & 0.08 \\
\text{Nb}_2\text{O}_5 & 78.60 & 80.05 & 75.69 \\
\text{T}_{2}\text{O}_3 & 0.06 & 0.11 \\
\text{V}_2\text{O}_5 & 0.02 & 0.03 \\
\text{TiO}_2 & 4.10 & 4.12 & 5.01 \\
\text{ZrO}_2 & 0.66 & 0.37 \\
\text{SnO}_2 & 0.06 \\
\text{ThO}_2 & 0.12 & 0.17 \\
\text{Al}_2\text{O}_3 & 0.18 \\
\text{RE}_2\text{O}_3 & 0.43 & 0.50 \\
\text{Fe}_2\text{O}_3 & 0.20 & 0.13 \\
\text{FeO} & 0.06 & 0.07 \\
\end{array}
\]

PbO 0.01 0.02  
MgO 0.11 0.11  
MnO 0.08 0.06  
CaO 0.41 0.13 0.12  
BaO 0.35 0.35 0.58  
K\(_2\)O 2.73 2.76 2.12  
F 0.38 0.11  
H\(_2\)O\(^{+}\) 8.54 8.37 [16.05]  
Total [99.86] [99.89] 100.74

(1) Lueshe, Congo; original total given as 100.192%, corrected for goyazite 7.8%, ilmenite 2.0%, (rutile, brookite, anatase) 1.3%, calcite 0.9%, kaolinite 0.55%, goethite 0.3%, H\(_2\)O\(^{18}\) C. (2) Do.; original total given as 100.066%, corrected for goyazite 7.5%, ilmenite 1.9%, (rutile, anatase) 1.1%, calcite 1.6%, kaolinite 0.4%, goethite 0.2%, H\(_2\)O\(^{18}\) C. (3) Do.; by electron microprobe, H\(_2\)O from structure analysis; corresponds to \([(\text{H}_2\text{O})_{0.99}\text{Sr}_{0.05}\text{Ca}_{0.01}]_{2-1.05(\text{Nb}_{1.80}\text{Ti}_{0.20})_{2-2.06(\text{O}_{4.06}(\text{OH})_{1.94})_{2-6.60}}[[\text{H}_2\text{O})_{0.36}\text{K}_{0.14}]_{2-1.00}].

**Mineral Group:** Pyrochlore supergroup (general formula - \(A_2B_2X_6Y\)); pyrochlore group \((B = \text{Nb}^{3+})\).

**Occurrence:** In alluvial deposits and residual soils from a carbonatite deposit, formed from pyrochlore by the leaching of Na, Ca, and F in waters rich in K ions.

**Association:** Na-Ca pyrochlores, lueshite, columbite, fersmite, ilmenite, rutile, ilmenite, barian goyazite.

**Distribution:** In the Lueshe carbonatite, 150 km north of Goma, Kivu Province, Congo (Zaire).

**Name:** For a member of the \textit{pyrochlore} group with a prefix to indicate dominant H\(_2\)O \((\text{hydro})\) in the \(Y\) site and in the \(A\) site. Formerly ‘kalipyrochlore’, now redefined.

**Type Material:** National Museum of Natural History, Washington, D.C., USA (136440).