Crystal Data: Triclinic, pseudohexagonal. Point Group: 1 or \( \overline{1} \). As platy crystals, flattened on \( \{001\} \), bounded by \( \{010\}, \{110\}, \) and \( \{1\overline{1}0\} \), to 0.1 mm, in lamellar aggregates || \( \{001\} \), on needles of uranophane. Twinning: Common on a plane or planes in the \( \{001\} \) zone, to give pseudohexagonal outlines.

Physical Properties: Cleavage: \( \{001\} \), perfect; another \( \perp \) to first. Hardness = n.d. VHN = 113 D(meas.) = n.d. D(calc.) = 6.02 Radioactive.


Optical Class: Biaxial (-). Pleochroism: \( X = \) pale brown to colorless; \( Y = Z = \) dull brown. Orientation: \( X = c^\ast; Y \wedge [110] = 85^\circ; Z \wedge [110] = 5^\circ. \) \( \alpha = \sim 1.9 \) \( \beta = \sim 2.0 \) \( \gamma = \sim 2.0 \)

Cell Data: Space Group: \( P1 \) or \( P\overline{1} \). \( a = 20.81(2) \) \( b = 12.06(2) \) \( c = 16.30(2) \)
\( \alpha = 103.8(2)^\circ \) \( \beta = 115.1(2)^\circ \) \( \gamma = 90.4(2)^\circ \) \( Z = 9 \)

X-ray Powder Pattern: Shinkolobwe, Congo.
3.122 (100), 7.12 (80), 3.55 (60), 3.47 (60), 2.486 (40), 1.961 (40), 2.008 (30)

Chemistry:
\[
\begin{array}{ccc}
\text{UO}_3 & \text{PbO} & \text{H}_2\text{O} \\
78.28 & 16.38 & [5.34] \\
79.48 & 15.51 & 5.01 \\
\hline
\text{Total} & \text{[100.00]} & 100.00 \\
\end{array}
\]

(1) Shinkolobwe, Congo; by electron microprobe, average of eight analyses, \( \text{H}_2\text{O} \) by difference; corresponding to \( \text{Pb}_{1.07}\text{U}_{3.98}\text{O}_{13} \cdot 4\text{H}_2\text{O} \). (2) \( \text{PbU}_{4}^{6+}\text{O}_{13} \cdot 4\text{H}_2\text{O} \).

Occurrence: A very rare secondary mineral in the oxidized zone of a hydrothermal uranium deposit (Shinkolobwe, Congo).

Association: Uraninite, uranophane, becquerelite, masuyite, torbernite, kasolite, rutherfordine, wölsendorfite (Shinkolobwe, Congo); metazeunerite, nováčekite, zeunerite, antlerite, langite (Jáchymov, Czech Republic).

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire). At Jáchymov (Joachimsthal), Czech Republic.

Name: To honor Emile Richet (1884–1939), Belgian geologist, formerly Chief Geologist, Union Minière du Haut-Katanga.

Type Material: University of Liège, Liège, Belgium, 1712.