

Crystal Data: Triclinic, pseudo-hexagonal. *Point Group:* 1 or $\bar{1}$. As platy crystals, flattened on {001}, bounded by {010}, {110}, and $\{1\bar{1}0\}$, to 0.1 mm, in lamellar aggregates || {001}, on needles of uranophane. *Twining:* Common on a plane or planes in the [001] zone, to give pseudo-hexagonal 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 Properties: Opaque to translucent. *Color:* Black; brown in transmitted light.

Luster: Adamantine.

Optical Class: Biaxial (-). *Pleochroism:* X = pale brown to colorless; Y = Z = dull brown.

Orientation: X = c^* ; Y \wedge [110] = 85°; Z \wedge [110] = 5°. $\alpha = \sim 1.9$ $\beta = \sim 2.0$ $\gamma = \sim 2.0$ 2V(meas.) = Very large.

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

	(1)	(2)
UO ₃	78.28	79.48
PbO	16.38	15.51
H ₂ O	[5.34]	5.01
Total	[100.00]	100.00

(1) Shinkolobwe, Congo; by electron microprobe, average of eight analyses, H₂O by difference; corresponding to Pb_{1.07}U_{3.98}O₁₃•4.31H₂O. (2) PbU₄⁶⁺O₁₃•4H₂O.

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.

References: (1) Vaes, J.F. (1947) Six nouveaux minéraux d'urane provenant de Shinkolobwe (Katanga). Ann. Soc. Géol. Belg., 70, B212–B229, esp. B221–B223 (in French). (2) (1948) Amer. Mineral., 33, 384 (abs. ref. 1). (3) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 91–92. (4) Piret, P. and M. Deliens (1984) Nouvelles données sur la richetite PbO.4UO₃.4H₂O. Bull. Minéral., 107, 581–585 (in French with English abs.).