

Lepersonnite-(Gd)

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. As mammillary crusts or spherules, to 5 mm in diameter, composed of radiating acicular crystals elongated along [001].

Physical Properties: Hardness = n.d. $D(\text{meas.}) = 3.97(5)$ $D(\text{calc.}) = 4.01$ Radioactive.

Optical Properties: Transparent to translucent. *Color:* Bright yellow.

Optical Class: Biaxial (-). *Pleochroism:* $X = \text{pale yellow}$; $Y = Z = \text{bright yellow}$. *Orientation:* $Y = c$. $\alpha = 1.638(2)$ $\beta = 1.666(2)$ $\gamma = 1.682(2)$ $2V(\text{meas.}) = \text{n.d.}$ $2V(\text{calc.}) = 73^\circ$

Cell Data: *Space Group:* $Pn\bar{m}$ or $Pnn2$. $a = 16.23(3)$ $b = 38.74(9)$ $c = 11.73(3)$
 $Z = 2$

X-ray Powder Pattern: Shinkolobwe, Congo.

8.15 (100), 3.65 (70), 3.21 (50), 2.86 (40), 4.06 (15), 11.1 (10), 6.46 (10)

Chemistry:

	(1)
SiO ₂	2.79
UO ₃	76.14
Y ₂ O ₃	0.41
Gd ₂ O ₃	2.09
Tb ₂ O ₃	0.09
Dy ₂ O ₃	1.07
CaO	0.45
H ₂ O	12.12
CO ₂	4.02
Total	99.18

(1) Shinkolobwe, Congo; by electron microprobe, CO₂ by chromatography, H₂O by TGA; corresponds to $\text{Ca}_{0.71}(\text{Gd}_{1.04}\text{Dy}_{0.52}\text{Y}_{0.32}\text{Tb}_{0.06})_{\Sigma=1.94}\text{U}_{23.95}\text{C}_{8.10}\text{Si}_{4.18}\text{O}_{100} \cdot 59.90\text{H}_2\text{O}$.

Occurrence: In the lower portion of the oxidation zone developed above uraninite-bearing dolomitic rocks.

Association: Bijvoetite, sklodowskite, curite, uranophane, becquerelite, rutherfordine, studtite.

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire).

Name: For Jacques Lepersonne, honorary Head of the Department of Geology and Mineralogy, Royal Museum of Central Africa, Tervuren, Belgium, and for its *gadolinium* content.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RGM13781, RGM2696, RGM13250; National Museum of Natural History, Washington, D.C., USA, 150228.

References: (1) Deliens, M. and P. Piret (1982) Bijvoetite et lepersonnite, carbonates hydratés d'uranyle et de terres rares de Shinkolobwe, Zaïre. *Can. Mineral.*, 20, 231–238 (in French with English abs.). (2) (1983) *Amer. Mineral.*, 68, 1248 (abs. ref. 1).