

**Sayrite****Pb<sub>2</sub>(UO<sub>2</sub>)<sub>5</sub>O<sub>6</sub>(OH)<sub>2</sub>•4H<sub>2</sub>O**

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. As isolated prismatic crystals, to 0.6 mm, elongated along [010], showing  $\{\bar{1}02\}$ , {001}, {100}, terminated by {110}.

**Physical Properties:** *Cleavage:*  $\{\bar{1}02\}$ , distinct. Hardness = n.d. VHN = 150  
D(meas.) = n.d. D(calc.) = 6.76 Radioactive.

**Optical Properties:** Transparent to translucent. *Color:* Yellow-orange to red-orange.  
*Luster:* Vitreous to adamantine.

*Optical Class:* Biaxial (-). *Pleochroism:* Pale yellow to amber-yellow. *Orientation:*  $X \simeq c$ ;  $Y = b$ ;  $Z \simeq a$ .  $\alpha = \text{n.d.}$   $\beta = \sim 1.94$   $\gamma = \sim 1.95$   $2V(\text{meas.}) = \text{Large}$ .

**Cell Data:** *Space Group:*  $P2_1/c$ .  $a = 10.704(3)$   $b = 6.960(2)$   $c = 14.533(3)$   
 $\beta = 116.81(2)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Shinkolobwe, Congo.  
3.113 (100), 3.512 (90), 7.01 (80), 3.052 (70), 5.63 (50), 1.955 (50), 1.916 (50)

<b>Chemistry:</b>	(1)	(2)
UO <sub>3</sub>	73.58	72.72
PbO	21.82	22.70
H <sub>2</sub> O	[4.60]	4.58
Total	[100.00]	100.00

(1) Shinkolobwe, Congo; by electron microprobe, average of ten analyses; corresponding to 1.91PbO•5.03(UO<sub>3</sub>)•4.99H<sub>2</sub>O. (2) Pb<sub>2</sub>(UO<sub>2</sub>)<sub>5</sub>O<sub>6</sub>(OH)<sub>2</sub>•4H<sub>2</sub>O.

**Occurrence:** An alteration product of uraninite in the oxidized zone of a uranium orebody.

**Association:** Uraninite, becquerelite, uranophane, richetite, masuyite.

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

**Name:** To honor Dr. David Sayre (1924– ), American crystallographer, State University of New York, Stony Brook, New York, USA.

**Type Material:** Royal Museum of Central Africa, Tervuren, Belgium, RGM13944.

**References:** (1) Piret, P., M. Deliens, J. Piret-Meunier, and G. Germain (1983) La sayrite, Pb<sub>2</sub>[(UO<sub>2</sub>)<sub>5</sub>O<sub>6</sub>(OH)<sub>2</sub>]•4H<sub>2</sub>O, nouveau minéral; propriétés et structure cristalline. Bull. Minéral., 106, 299–304 (in French with English abs.). (2) (1984) Amer. Mineral., 69, 568 (abs. ref. 1).