Phuralumite $Al_2(UO_2)_3(PO_4)_2(OH)_6 \cdot 10H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic crystals, elongated along [001], flattened on [010], with {110}, {$\bar{1}$01}, {001}, to 0.5 mm, in crystalline veinlets and crusts.

Physical Properties: *Cleavage:* On {010}, perfect. Hardness = ∼3 D(meas.) = 3.5 D(calc.) = 3.52 Radioactive.

Optical Properties: Semitransparent. *Color:* Lemon-yellow.
Optical Class: Biaxial (–). *Pleochroism:* X = bright yellow; $Y = Z$ = pale yellow. *Orientation:* $X = b$; $Y \wedge c = 0°$–$8°$. $\alpha = [1.559]$ $\beta = 1.616$ $\gamma = 1.624$ 2V(meas.) = 40°

Cell Data: *Space Group:* $P2_1/a$. $a = 13.836(6)$ $b = 20.918(6)$ $c = 9.428(3)$ $\beta = 112.44(3)°$ Z = 4

X-ray Powder Pattern: Kobokobo pegmatite, Congo.
10.4 (100), 3.08 (80), 5.17 (70), 3.40 (50), 3.47 (40), 8.0 (20), 2.95 (20)

Chemistry:

	(1)	(2)
UO_3	65.9	64.22
P_2O_5	10.3	10.62
Al_2O_3	7.6	7.63
H_2O	[16.2]	17.53
Total	[100.0]	100.00

(1) Kobokobo pegmatite, Congo; by electron microprobe, H_2O by difference. (2) $Al_2(UO_2)_3(PO_4)_2(OH)_6 \cdot 10H_2O$.

Occurrence: A rare secondary mineral in the oxidized uraniferous zone of a complex granite pegmatite.

Association: Meta-autunite, phosphuranylite, threadgoldite, upalite.

Distribution: From the Kobokobo pegmatite, Lusungu River district, Kivu Province, Congo (Zaire).

Name: For PHosphorus, URanium, and ALUMinum in the composition.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG6201, RMG6195, RMG6197, RMG9852.

References: (1) Deliens, M. and P. Piret (1979) Les phosphates d'uranyle et d'aluminum de Kobokobo. II. La phuralumite $Al_2(UO_2)_3(PO_4)_2(OH)_6 \cdot 10H_2O$ et l'upalite $Al(UO_2)_3(PO_4)_2(OH)_3$, nouveaux minéraux. Bull. Minéral., 102, 333–337 (in French with English abs.). (2) (1980) Amer. Mineral., 65, 208 (abs. ref. 1). (3) Piret, P., J. Piret-Meunier, and J.-P. Declercq (1979) Structure of phuralumite. Acta Cryst., 35, 1880–1882.