Moreauite $Al_3(UO_2)(PO_4)_3(OH)_2 \cdot 13H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As tabular crystals flattened on {100}, may be elongated along [010], to 0.2 mm; as nodules or subparallel aggregates of tablets resembling "open books."

Physical Properties: *Cleavage:* Good on {100}, micaceous. Hardness = n.d. D(meas.) = 2.64(5) D(calc.) = 2.61 Radioactive; bright green fluorescence under SW and LW UV.

Optical Properties: Translucent to opaque. *Color:* Greenish yellow. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $Y = b$; $Z \simeq c$; $X \approx a^*$. $\alpha = 1.540(3)$ $\beta = 1.552(2)$ $\gamma = 1.558(2)$ 2V(meas.) = n.d. 2V(calc.) = 70°

Cell Data: *Space Group:* $P2_1/c$. $a = 23.41(6)$ $b = 21.44(4)$ $c = 18.34(3)$ $\beta = 92.0(1)°$ Z = 16

X-ray Powder Pattern: Kobokobo pegmatite, Congo (fully hydrated). 10.80 (100), 11.69 (80), 9.13 (70), 2.931 (70), 14.02 (60), 3.043 (60), 5.43 (40)

Chemistry:

	(1)	(2)	(3)
UO_3	38.9	32.8	31.63
P_2O_5	27.2	23.0	23.55
Al_2O_3	20.4	17.2	16.92
H_2O	[13.5]	[27.0]	27.90
Total	[100.0]	[100.0]	100.00

(1) Kobokobo pegmatite, Congo; by electron microprobe, average of five grains, partially dehydrated, H_2O by difference, corresponding to $Al_{3.05}(U_{1.04}O_2)(P_{0.97}O_4)_3(OH)_{1.94} \cdot 13H_2O$. (2) Do.; H_2O calculated from density, supported by TGA. (3) $Al_3(UO_2)(PO_4)_3(OH)_2 \cdot 13H_2O$.

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

Association: Furongite, ranunculite, phosphosiderite.

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

Name: Honors Professor Jules Moreau (1931–), Belgian mineralogist, Catholic University of Louvain, Louvain, Belgium.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG6601, RMG6197, RMG6203.

References: (1) Deliens, M. and P. Piret (1985) Les phosphates d'uranyle et d'aluminium de Kobokobo. VII. La moreauïte, $Al_3UO_2(PO_4)_3(OH)_2 \cdot 13H_2O$, nouveau minéral. Bull. Minéral., 108, 9–13 (in French with English abstract). (2) (1985) Amer. Mineral., 70, 1330–1331 (abs. ref. 1).