Triangulite $Al_3(UO_2)_4(PO_4)_4(OH)_5 \cdot 5H_2O$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$ or 1. Tablets, flattened on {100}, with triangular outline, to 0.2 mm, less commonly pseudo rhombohedral. *Twinning:* Common, about [011].

Physical Properties: Hardness = 2–3 D(meas.) = 3.7(2) D(calc.) = 3.68 Radioactive.

Optical Properties: Transparent. *Color:* Bright yellow, yellow-green. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Pleochroism:* Y = pale yellow-green; Z = bright yellow. *Orientation:* $X \perp \{100\}$; $Y \simeq [011]$; $Z \simeq [0\overline{1}1]$. $\alpha = [1.639]$ $\beta = 1.665(2)$ $\gamma = 1.704(2)$ 2V(meas.) = 80°

Cell Data: *Space Group:* $P\overline{1}$ or $P1$. $a = 10.39$ (3) $b = 10.56(3)$ $c = 10.60(3)$ $\alpha = 116.4(1)°$ $\beta = 107.8(1)°$ $\gamma = 113.4(1)°$ Z = 1

X-ray Powder Pattern: Kobokobo pegmatite, Congo.
7.80 (100), 3.87 (80), 3.15 (70), 2.99 (50), 4.70 (30), 3.74 (20), 3.63 (20)

Chemistry:

	(1)	(2)
UO_3	67.10	66.68
P_2O_5	16.24	16.54
Al_2O_3	8.90	8.91
H_2O	[7.76]	7.87
Total	[100.00]	100.00

(1) Kobokobo pegmatite, Congo; by electron microprobe, average of seven analyses, H_2O by difference; corresponds to $Al_{3.01}(UO_2)_{4.04}(PO_4)_{3.94}(OH)_{5.29} \cdot 4.78H_2O$. (2) $Al_3(UO_2)_4(PO_4)_4(OH)_5 \cdot 5H_2O$.

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

Association: Meta-autunite, furongite, phosphuranylite, ranunculite, beryl, zircon, columbite, feldspar, quartz.

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

Name: For the typical *triangular* habit of the crystals.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG6192.

References: (1) Deliens, M. and P. Piret (1982) Les phosphates d'uranyle et d'aluminium de Kobokobo. VI. La triangulite, $Al_3(UO_2.PO_4)_4(OH)_5.5H_2O$, nouveau minéral. Bull. Minéral., 105, 611–614 (in French with English abs.). (2) (1984) Amer. Mineral., 69, 212 (abs. ref. 1).