Threadgoldite $Al(UO_2)_2(PO_4)_2(OH)\cdot 8H_2O$

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Crystal Data: Monoclinic. *Point Group:* $2/m$ or m. Tabular micaceous crystals, elongated along [010], showing {100}, {001}, {010}, {012}, to 1 mm.

Physical Properties: *Cleavage:* On {100}, micaceous; also on {001}, {010}, {012}. Hardness = n.d. D(meas.) = 3.4 D(calc.) = 3.33 Radioactive; fluoresces green under LW UV, pale green under SW UV.

Optical Properties: Transparent. *Color:* Yellow-green; very pale yellow to colorless in transmitted light. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Orientation:* $Y = b$; $Z \wedge c = 4°$. $\alpha = [1.573]$ $\beta = 1.583$ $\gamma = 1.588$ 2V(meas.) = 70°

Cell Data: *Space Group:* $C2/m$ or Cc. $a = 20.168(8)$ $b = 9.847(2)$ $c = 19.719(4)$ $\beta = 110.71(2)°$ Z = 8

X-ray Powder Pattern: Kobokobo pegmatite, Congo.
9.43 (100), 3.474 (80), 3.366 (60), 2.197 (60), 5.35 (50), 4.10 (50), 4.93 (40b)

Chemistry:

	(1)	(2)
UO_3	63.5	62.31
P_2O_5	13.7	15.46
Al_2O_3	5.4	5.55
H_2O	17.0	16.68
Total	99.6	100.00

(1) Kobokobo pegmatite, Congo; by electron microprobe, H_2O by TGA on a separate sample; corresponding to $Al_{0.98}(UO_2)_{2.05}(PO_4)_{1.78}(OH)\cdot 8H_2O$. (2) $Al(UO_2)_2(PO_4)_2(OH)\cdot 8H_2O$.

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

Association: Meta-autunite, phosphuranylite, phuralumite, bolivarite, upalite, eylettersite, mundite.

Distribution: Found in the Kobokobo pegmatite, Lusungu River district, Kivu Province, Congo (Zaire). From the South Alligator Valley, Northern Territories, Australia.

Name: Honoring Ian Malcomb Threadgold (1929–), Australian mineralogist, University of Sydney, Sydney, Australia.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG5951; National Museum of Natural History, Washington, D.C., USA, 145687.

References: (1) Deliens, M. and P. Piret (1979) Les phosphates d'uranyle et d'aluminium de Kobokobo IV. La threadgoldite, $Al(UO_2)_2(PO_4)_2(OH)\cdot 8H_2O$, nouveau minéral. Bull. Minéral., 102, 338–341 (in French with English abs.). (2) (1980) Amer. Mineral., 65, 209 (abs. ref. 1). (3) Piret, P., J.-P. Declercq, and D. Wauters-Stoop (1979) Structure of threadgoldite. Acta Cryst., 35, 3017–3020. (4) Khosrawan-Sazedj, F. (1982) On the space group of threadgoldite. Tschermaks Mineral. Petrog. Mitt., 30, 111–115.

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