

# Threadgoldite

# $\text{Al}(\text{UO}_2)_2(\text{PO}_4)_2(\text{OH}) \cdot 8\text{H}_2\text{O}$

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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.  $D(\text{meas.}) = 3.4$   $D(\text{calc.}) = 3.33$  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:*  $Y = b$ ;  $Z \wedge c = 4^\circ$ .  $\alpha = [1.573]$   $\beta = 1.583$   $\gamma = 1.588$   $2V(\text{meas.}) = 70^\circ$

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

**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)
$\text{UO}_3$	63.5	62.31
$\text{P}_2\text{O}_5$	13.7	15.46
$\text{Al}_2\text{O}_3$	5.4	5.55
$\text{H}_2\text{O}$	17.0	16.68
Total	99.6	100.00

(1) Kobokobo pegmatite, Congo; by electron microprobe,  $\text{H}_2\text{O}$  by TGA on a separate sample; corresponding to  $\text{Al}_{0.98}(\text{UO}_2)_{2.05}(\text{PO}_4)_{1.78}(\text{OH}) \cdot 8\text{H}_2\text{O}$ . (2)  $\text{Al}(\text{UO}_2)_2(\text{PO}_4)_2(\text{OH}) \cdot 8\text{H}_2\text{O}$ .

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

**Association:** Meta-autunite, phosphuranylite, phuralumite, bolivarite, upalite, eyletersite, 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,  $\text{Al}(\text{UO}_2)_2(\text{PO}_4)_2(\text{OH}) \cdot 8\text{H}_2\text{O}$ , 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. Tschermarks Mineral. Petrog. Mitt., 30, 111–115.