Furongite $Al_2(UO_2)(PO_4)_2(OH)_2 \cdot 8H_2O$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$ or 1. As tabular crystals, to 0.5 mm, in rosettes, and dense cryptocrystalline aggregates.

Physical Properties: *Cleavage:* On $\{\overline{1}11\}$ and $\{1\overline{1}1\}$, very perfect. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 2.82–3.0 D(calc.) = 2.92 Radioactive; strong pale yellowish green fluorescence under UV.

Optical Properties: Translucent. *Color:* Bright to pale yellow, lemon-yellow; pale yellow in transmitted light. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Pleochroism:* Observed, in yellows. *Orientation:* $Z \wedge \{\overline{1}11\} \simeq 38°$.
$\alpha = 1.538–1.549$ $\beta = 1.558–1.567$ $\gamma = 1.566–1.575$ 2V(meas.) = 65°–80° 2V(calc.) = 64°

Cell Data: *Space Group:* $P\overline{1}$ or $P1$. $a = 19.227–19.271$ $b = 14.094–14.173$
$c = 12.102–12.136$ $\alpha = 67.21°–67.62°$ $\beta = 115.45°–115.64°$ $\gamma = 94.51°–94.58°$ Z = 4

X-ray Powder Pattern: Hunan Province, China.
10.2 (100), 8.62 (80), 4.310 (50), 3.639 (40), 2.868 (35), 5.553 (30), 5.096 (30)

Chemistry:

	(1)	(2)	(3)
UO_3	41.40	49.61	41.33
P_2O_5	18.54	18.56	20.51
SiO_2	0.80		
Al_2O_3	13.67	9.38	14.73
Fe_2O_3	0.61		
MgO	0.015		
CaO	0.094		
BaO	0.59		
K_2O	0.11		
H_2O^+	14.54		
H_2O^-	9.36		
H_2O		22.45	23.43
Total	99.729	100.00	100.00

(1) Hunan Province, China. (2) Kobokobo pegmatite, Congo; by electron microprobe, H_2O by TGA. (3) $Al_2(UO_2)(PO_4)_2(OH)_2 \cdot 8H_2O$.

Occurrence: In the oxidation zone of a uranium deposit (Hunan Province, China); in a complex granite pegmatite (Kobokobo pegmatite, Congo).

Association: Variscite, evansite, autunite, halloysite, "opal", "limonite" (Hunan Province, China); moreauite (Kobokobo pegmatite, Congo).

Distribution: From an undefined locality in western Hunan Province, China. At the Kobokobo pegmatite, Lusungu River district, Kivu Province, Congo (Zaire).

Name: From a poetic name for Hunan Province, China.

Type Material: n.d.

References: (1) Hunan 230 Laboratory, Hunan 305 Geological Team and X-Ray Laboratory, Wahan Geological Institute (1976) Furongite – a new uranium mineral found in China. Acta Geologica Sinica, 2, 203–204 (in Chinese). (2) (1978) Amer. Mineral., 63, 425 (abs. ref. 1). (3) Shen Jinchuan and Peng Zhizhong (1981) The crystal structure of furongite. Acta Cryst., A37 supplement, C186. (4) Deliens, M. and P. Piret (1985) Les phosphates d'uranyle et d'aluminum de Kobokobo, VIII. La furongite. Ann. Soc. Géol. Belg., 108, 365–368 (in French with English abs.).