Chadwickite $(UO_2)(HAsO_3)$

Crystal Data: Tetragonal. *Point Group*: n.d. As earthy and scaly crusts of grains to 20 μm that rarely exhibit a rectangular or square tabular (001)face.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: Uneven. *Tenacity*: n.d. Hardness = 2 D(meas.) = n.d. D(calc.) = 4.86 Nonfluorescent.

Optical Properties: Partly transparent. *Color*: Yellow. *Streak*: Yellow. *Luster*: Dull. *Optical Class*: Uniaxial (-). ε = 1.750 ω = 1.845 *Pleochroism*: *E* = colorless, *O* = yellow.

Cell Data: *Space Group*: n.d. *a* = 11.00(1) *c* = 15.96(2) Z = 14

X-ray Powder Pattern: Sophia mine, near Wittichen, Baden-Württemberg, Germany. 4.95 (100), 5.58 (80), 3.33 (80), 4.40 (60), 3.03 (60), 2.91 (50)

Chemistry:

	(1)
UO_3	73.0
As_2O_3	25.5
H_2O	1.5
Total	100.0

(1) Sophia mine, near Wittichen, Baden-Württemberg, Germany; average electron microprobe analysis, H_2O by difference; corresponding to $U_{1.03}As_{1.04}H_{0.67}O_5$.

Occurrence: A secondary mineral in a uranium deposit.

Association: Uraninite, metakahlerite, abernathyite, erythrite, pitticite.

Distribution: From the dump of the Sophia mine, near Wittichen, central Black Forest, Baden-Württemberg, Germany.

Name: Honors Sir James *Chadwick* (1891-1974), English Nobel Laureate in physics for his proof of the existence of neutrons.

Type Material: Natural Science Museum, Stuttgart and the University of Stuttgart, Germany.

References: (1) Walenta, K. (1998) Chadwickite, a new uranyl arsenite from Wittichen in the Black Forest. Aufschluss, 49, 253-257 (in German, English abs.). (2) (1999) Amer. Mineral., 84, 1195 (abs. ref. 1).