Metakahlerite \( \text{Fe}^{2+}(\text{UO}_2)_2(\text{AsO}_4)_2\cdot8\text{H}_2\text{O} \)

Crystal Data: Tetragonal. Point Group: n.d. As square tabular crystals, to 80 \( \mu \)m, and in scaly aggregates.

Physical Properties: Cleavage: Perfect on \{001\}; good on \{010\}. Hardness = n.d. 

\( \text{D(meas.)} = 3.73-3.77 \) (synthetic) \( \text{D(calc.)} = [3.83] \) Radioactive.

Optical Properties: Transparent. Color: Yellow to yellow-brown. Luster: Pearly on \{001\}. 

Optical Class: Uniaxial (–), anomalously biaxial (–). Pleochroism: Weak; \( O = \) pale yellow; \( E = \) colorless. \( \omega = 1.642(2) \) \( \epsilon = 1.608(2) \) \( 2V(\text{meas.}) = 0^\circ-22^\circ \)

Cell Data: Space Group: n.d. \( a = 20.25(1) \) \( c = 17.20(1) \) \( Z = 16 \)

X-ray Powder Pattern: Sophia mine, Germany; indistinguishable from metakirchheimerite. 
8.55 (10), 3.59 (9), 4.30 (6), 5.11 (5), 3.45 (4), 3.01 (4), 2.15 (4)

Chemistry: (1) Sophia mine, Germany; no quantitative analysis performed, the qualitatively dominant presence of Fe, As, U confirmed by microchemical analysis.

Mineral Group: Meta-autunite group.

Occurrence: A secondary mineral in the oxidized zone of U–As bearing deposits.

Association: Arseniosiderite, scorodite, löllingite, uraninite, siderite (Hüttenberg, Austria); kahlerite (Southwick Cliffs, Scotland).

Distribution: In Germany, in the Black Forest, from the Sophia and St. Joseph mines and at the Schmiedestollen, near Wittichen, and from Menzenschwand; at Ellweiler, Rhineland-Palatinate; and from Schneeberg, Saxony. From Hüttenberg, Carinthia, Austria. At Southwick Cliffs, near Dalbeattie, Kirkcudbrightshire, Scotland. From the Krantzberg mine, 20 km west of Karibib, Namibia.

Name: The prefix meta indicates the dehydration product of kahlerite.

Type Material: n.d.