Kahlerite $Fe^{2+}(UO_2)_2(AsO_4)_2 \cdot 10-12H_2O$

Crystal Data: Tetragonal. *Point Group:* $4/m$. As thin tablets, flattened on {001}, displaying {111}, {021}, {012}, {011}, {010}, to 2 mm.

Physical Properties: *Cleavage:* Perfect on {001}. Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.22 Radioactive.

Optical Properties: Semitransparent. *Color:* Lemon-yellow to yellowish green. *Optical Class:* Uniaxial, nearly, to anomalously biaxial (–). α = n.d. $\beta = 1.632(5)$ $\gamma = 1.633(5)$ 2V(meas.) = 9°–33°

Cell Data: *Space Group:* $P4_2/n$. $a = 14.30$ $c = 21.97$ Z = 8

X-ray Powder Pattern: Synthetic $Fe(UO_2)_2(AsO_4)_2 \cdot 12H_2O$.
3.53 (100), 11.1 (80), 5.55 (50), 3.59 (50), 1.603 (40), 1.763 (30), 3.20 (20)

Chemistry: (1) Hüttenberg, Austria; qualitative analysis confirms a ferrous uranium arsenate hydrate.

Mineral Group: Autunite group.

Occurrence: A very rare secondary mineral in the oxidized zone of a uraninite-bearing iron deposit (Hüttenberg, Austria).

Association: Arsenosiderite, scorodite, symplesite, pitticite, löllingite (Hüttenberg, Austria); lavendulan, zeunerite, metazeunerite, malachite, cornubite, mixite, tyrolite, wulfenite, metakahlerite (Southwick Cliffs, Scotland).

Distribution: From Hüttenberg, Carinthia, Austria. On the Sophia and St. Joseph mine dumps, near Wittichen, and at Menzenschwand, Black Forest, Germany. From the Mas-d'Alary uranium deposit, three km south-southeast of Lodève, Hérault, France. At Southwick Cliffs, near Dalbeattie, Kirkcudbrightshire, Scotland.

Name: Honors Dr. Franz Kahler, geologist, Carinthian Landesmuseum, Klagenfurt, Austria.

Type Material: Carinthian Landesmuseum, Klagenfurt, Austria; Cambridge University, Cambridge, England.

References: (1) Meixner, H. (1953) Kahlerit, ein neues Mineral der Uranglimmergruppe, aus der Hüttenberger Lagerstätte, Kärnten. Der Karinthin, 23, 277–280 (in German). (2) (1954) Amer. Mineral., 39, 1038 (abs. ref. 1). (3) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 204–205. (4) Walenta, K. (1964) Beiträge zur Kenntnis seltener Arsenatmineralien unter besonderer Berücksichtigung von Vorkommen des Schwarzwaldes. 1. Folge. Tschermaks Mineral. Petrog. Mitt., 9, 111–174, esp. 172 (in German).