

Crystal Data: Monoclinic, pseudohexagonal. *Point Group:* $2/m$. Needlelike crystals, elongated along [001], to 1 mm, in radial fibrous aggregates and crusts.

Physical Properties: *Tenacity:* Flexible. Hardness = Soft. $D(\text{meas.}) = 3.58$ (synthetic)
 $D(\text{calc.}) = 3.73$ Radioactive.

Optical Properties: Translucent to transparent. *Color:* Yellow to pale yellow; nearly colorless in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $Z = \text{elongation}$. $\alpha = 1.537\text{-}1.551$ $\beta = 1.555\text{-}1.686$
 $\gamma = 1.680\text{-}1.690$ $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* $C2/c$. $a = 14.068(6)$ $b = 6.721(3)$ $c = 8.428(4)$ $\beta = 123(6)^\circ$ $Z = 4$

X-ray Powder Pattern: Menzenschwand, Germany.
5.93 (10), 3.40 (8), 2.96 (6), 2.23 (6), 2.02 (5), 1.970 (5b), 4.27 (4)

Chemistry: Qualitative microchemical and electron microprobe analyses typically show major U with traces of Pb, H_2O , CO_3 attributed to impurities. Characterization of naturally occurring material rests on the equivalence of the X-ray pattern and optical properties with the synthetic compound, and chemical behavior as a peroxide.

Occurrence: A very rare mineral in the oxidized zone of some uranium-bearing mineral deposits.

Association: Uranophane, rutherfordine, lepersonnite (Shinkolobwe, Congo); billietite, uranophane, rutherfordine, heisenbergite, baryte, quartz, hematite, "limonite" (Menzenschwand, Germany); tengchongite, calcurmolite, kivuite (Tengchong Co., China).

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire) [TL]. At Menzenschwand, Black Forest, Germany. From Mitterberg, Salzburg, Austria. In France, at Davignac, Corrèze, and from the Mas-d'Alary uranium deposit, three km south-southeast of Lodève, Hérault. In Tengchong Co., and at Tongbiguan village, Yingjiang Co., Yunnan Province, China.

Name: Honors Franz Edward *Studt*, geologist, who published a geological map of Shaba (Katanga) Province in 1913.

Type Material: Studied material at the Belgium Museum of Natural Sciences, Brussels (RC4372).

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 275. (2) Walenta, K. (1974) On studtite and its composition. *Amer. Mineral.*, 59, 166-171. (3) Zhi-Xiong Wang, Tian-Zhu Zeng, and Jin-Shiu Yin (1979) Discovery of studtite in China. *K'o Hsueh T'ung Pao*, 24(10), 453-454 (in Chinese). (4) (1979) *Chem. Abs.*, 91, 164 (abs. ref. 3). (5) Deliens, M. and P. Piret (1983) Metastudtite, $\text{UO}_4 \cdot 2\text{H}_2\text{O}$, a new mineral from Shinkolobwe, Shaba, Zaire. *Amer. Mineral.*, 68, 456-458. (6) Burns, P.C. and K.-A. Hughes (2003) Studtite, $[(\text{UO}_2)(\text{O}_2)(\text{H}_2\text{O})_2](\text{H}_2\text{O})_2$: The first structure of a peroxide mineral. *Amer. Mineral.*, 88, 1165-1168.