Studtite

\((\text{UO}_2)(\text{O}_2)(\text{H}_2\text{O})_2 \cdot 2\text{H}_2\text{O}\)

**Crystal Data:** Monoclinic, pseudohexagonal.  
*Point Group:* \(2/m\). Needledike 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:* \(Z = \text{elongation.}\)  
\(\alpha = 1.537-1.551\)  
\(\beta = 1.555-1.686\)  
\(\gamma = 1.680-1.690\)  
\(2V(\text{meas.}) = \text{Small.}\)

**Cell Data:**  
*Space Group:* \(C\overline{2}/c\).  
\(a = 14.068(6)\)  
\(b = 6.721(3)\)  
\(c = 8.428(4)\)  
\(\beta = 123(6)^\circ\)  
\(Z = 4\)

**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, \(\text{H}_2\text{O}\), \(\text{CO}_3\) 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:**  
(4) (1979) Chem. Abs., 91, 164 (abs. ref. 3).  