Yvonite $Cu(AsO_3OH)\cdot 2H_2O$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. As crystals, to 0.15 mm, elongated along [001], flattened on {010}, with prominent {100} and {010}, in radiated spherules and aggregates. *Twinning:* Multiple laminae, with composition plane {010}, twin axis $\perp$ {010}.

Physical Properties: *Cleavage:* On {100}, perfect; on {010}, poor. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 3.5–4 D(meas.) = 3.20(2) D(calc.) = 3.22

Optical Properties: Transparent. *Color:* Turquoise-blue. *Streak:* Blue. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Pleochroism:* Weak; X = light blue to colorless; Y = light blue; Z = blue. *Orientation:* $Z \simeq b$; $X \wedge c = 42°$. *Dispersion:* $r > v$, medium. *Absorption:* $Z > Y > X$. $\alpha = 1.615(2)$ $\beta = 1.660(2)$ $\gamma = 1.700(2)$ 2V(meas.) = 82(2)° 2V(calc.) = 84(1)°

Cell Data: *Space Group:* $P\overline{1}$. $a = 7.632(3)$ $b = 11.168(3)$ $c = 6.020(3)$ $\alpha = 89.32(3)°$ $\beta = 86.55(5)°$ $\gamma = 74.43(3)°$ Z = 4

X-ray Powder Pattern: Salsigne mine, France.
7.35 (100), 4.40 (60), 3.936 (60), 5.239 (50), 3.008 (50), 3.302 (40), 2.840 (35)

Chemistry:

	(1)	(2)
As_2O_5	47.8	47.98
Al_2O_3	0.4	
CuO	33.3	33.21
H_2O	19.0	18.81
Total	100.5	100.00

(1) Salsigne mine, France; by electron microprobe, average of eight analyses; H_2O taken as loss on ignition; corresponds to $Cu_{0.99}Al_{0.02}H_{0.93}(AsO_4)_{0.99}\cdot 2.04H_2O$. (2) $Cu(AsO_3OH)\cdot 2H_2O$.

Occurrence: A secondary mineral formed on specimens from mine dumps at a gold-bearing arsenic sulfide deposit.

Association: Geminite, lindackerite, arsenopyrite, bismuth, chalcopyrite, pushcharovskite.

Distribution: From the Salsigne mine, 15 km north of Carcassone, Aude, France.

Name: To honor Klaus Yvon (1943–), Professor of Crystallography, Geneva University, Geneva, Switzerland.

Type Material: Natural History Museum, Geneva University, Geneva, Switzerland, 450/33.

References: (1) Sarp, H. and R. Černý (1998) Description and crystal structure of yvonite, $Cu(AsO_3OH)2H_2O$. Amer. Mineral., 83, 383–389.