Juabite $Ca^{2+}Cu_{10}(Te^{4+}O_3)_4(AsO_4)_4(OH)_2 \cdot 4H_2O$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. As masses of platy crystals, tabular on {010}, with minor {100}, {$\overline{1}$01}, and {101}, to 0.3 mm.

Physical Properties: *Cleavage:* Perfect on {010}. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 3–4 D(meas.) = n.d. D(calc.) = 4.50

Optical Properties: Transparent to translucent. *Color:* Emerald-green to pale green; brownish white in reflected light with turquoise-blue internal reflections. *Streak:* Pale green. *Luster:* Vitreous to adamantine on cleavages.
Optical Class: Biaxial. n = [1.71–1.73]

Cell Data: *Space Group:* $P\overline{1}$. $a = 8.9903(7)$ $b = 10.1197(8)$ $c = 8.9959(7)$ $\alpha = 102.654(1)°$ $\beta = 92.432(1)°$ $\gamma = 70.432(1)°$ Z = 1

X-ray Powder Pattern: Centennial Eureka mine, Utah, USA.
3.097 (100), 9.28 (70), 4.65 (70), 3.018 (60), 2.658 (50), 2.468 (50), 1.740 (50)

Chemistry:

	(1)	(2)
As_2O_5	23.17	22.53
TeO_2	29.99	31.30
FeO	0.26	
CuO	38.51	39.00
CaO	2.52	2.75
H_2O	[4.39]	4.42
Total	[98.84]	100.00

(1) Centennial Eureka mine, Utah, USA; by electron microprobe, total Fe as FeO, H_2O calculated from stoichiometry; corresponds to $(Ca_{0.92}Fe_{0.07})_{\Sigma=0.99}Cu_{9.94}(Te_{0.96}O_3)_4(As_{1.04}O_4)_4(OH)_2 \cdot 4H_2O$.
(2) $CaCu_{10}(TeO_3)_4(AsO_4)_4(OH)_2 \cdot 4H_2O$.

Occurrence: A very rare secondary mineral formed by the reaction of enargite and tellurium-enriched solutions.

Association: Enargite, beudantite, quartz.

Distribution: Found on a dump at the Centennial Eureka mine, 1.5 km southwest of Eureka, Tintic district, Juab Co., Utah, USA.

Name: For Juab Co., Utah, USA, where the first specimen was collected.

Type Material: The Natural History Museum, London, England, 1997,1; Canadian Geological Survey, Ottawa, Canada, 67959.

References: (1) Roberts, A.C., R.A. Gault, M.C. Jensen, A.J. Criddle, and E.A. Moffatt (1997) Juabite, $Cu_5(Te^{6+}O_4)_2(As^{5+}O_4)_2 \cdot 3H_2O$, a new mineral species from the Centennial Eureka mine, Juab County, Utah. Mineral. Mag., 61, 139–144. (2) (1997) Amer. Mineral., 82, 1262 (abs. ref. 1). (3) Burns, P.C., C.M. Clark, and R.A, Gault (2000) Juabite, $CaCu_{10}(Te^{4+}O_3)_4(AsO_4)_4(OH)_2(H_2O)_4$: crystal structure and revision of the chemical formula. Can. Mineral., 38, 809–816.