Cualstibite $Cu_6Al_3Sb_3^{5+}O_{18}\cdot 16H_2O$

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Crystal Data: Hexagonal. *Point Group:* 3, 32, $3m$, $\overline{6}$, or $\overline{6}2m$. As columnar prismatic crystals, to 0.05 mm, and as radial aggregates, in crusts, and massive.

Physical Properties: *Fracture:* Conchoidal. Hardness = ∼2 D(meas.) = 3.18(5) D(calc.) = 3.25

Optical Properties: Transparent to translucent. *Color:* Blue-green. *Streak:* Pale blue. *Luster:* Vitreous.
Optical Class: Uniaxial (–); may be weakly biaxial (–). *Pleochroism:* E = colorless; O = light blue-green. $\omega = 1.672(2)$ $\epsilon = 1.644(2)$

Cell Data: *Space Group:* $P3$, $P312$, $P321$, $P3m1$, $P31m$, $P\overline{6}$, $P\overline{6}m2$, or $P\overline{6}2m$. $a = 9.20$ $c = 9.73$ Z = 1

X-ray Powder Pattern: Clara mine, Germany.
4.89 (10), 2.33 (9), 4.17 (8), 1.793 (8), 2.65 (7), 3.35 (5), 1.388 (5)

Chemistry:

	(1)	(2)
Sb_2O_5	36.8	34.57
Al_2O_3	10.4	10.90
CuO	32.0	34.00
H_2O^+	20.8	20.53
Total	[100.0]	100.00

(1) Clara mine, Germany; H_2O by TGA, after deduction of quartz and barite 9.9%, corresponds to $Cu_{5.62}Al_{2.85}Sb_{3.18}O_{18}\cdot 16.14H_2O$. (2) $Cu_6Al_3Sb_3^{5+}O_{18}\cdot 16H_2O$.

Occurrence: A secondary mineral from oxidation of a hydrothermal polymetallic barite–fluorite deposit.

Association: Cornwallite, arsenogoyazite, goethite, barite, fluorite, quartz.

Distribution: In the Clara mine, near Oberwolfach, Black Forest, Germany.

Name: From the chemical symbols of the mineral's major components, copper (CUprum), ALuminum, and antimony (STIBium).

Type Material: Institute for Mineralogy and Petrography, University of Stuttgart, Stuttgart, Germany.

References: (1) Walenta, K. (1984) Cualstibit, ein neues Sekundärmineral aus der Grube Clara im mittleren Schwarzwald (BRD). Chem. Erde, 43, 255–260 (in German with English abs.).
(2) (1985) Amer. Mineral., 70, 1329 (abs. ref. 1).

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