Adamite $Zn_2(AsO_4)(OH)$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Typically as crystals elongated along [001], [010], rarely [100], to 8 cm, may be equant; showing dominant {101} and {110}, with {011}, {210}, {010}, {120}, many other forms, usually in radial aggregates, fanlike rosettes, or crystalline crusts.

Physical Properties: *Cleavage:* {101}, good; {010}, poor. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 3.5 D(meas.) = 4.32–4.48 D(calc.) = 4.435–4.444 May fluoresce and phosphoresce lemon-yellow under SW and LW UV.

Optical Properties: Transparent to translucent. *Color:* Pale yellow, honey-yellow, brownish yellow, reddish; rarely white, colorless, blue, pale green to green, may be zoned; bright green (cuprian); bright pink, rose, or purple (cobaltian); in transmitted light, colorless or faintly tinted. *Luster:* Vitreous.
Optical Class: Biaxial (+), may be biaxial (–). *Pleochroism:* In pale colors if cuprian or cobaltian. *Orientation:* $X = a$; $Y = c$; $Z = b$. *Dispersion:* $r < v$ or $r > v$, strong. $\alpha = 1.708–1.722$ $\beta = 1.734–1.744$ $\gamma = 1.758–1.773$ 2V(meas.) = 78°–90°

Cell Data: *Space Group: Pnnm.* $a = 8.304–8.386$ $b = 8.524–8.552$ $c = 6.036–6.058$ Z = 4

X-ray Powder Pattern: Mapimí, Mexico.
2.448 (10), 4.897 (9), 2.967 (9), 2.698 (8), 1.608 (8), 5.944 (6), 4.242 (6)

Chemistry:

	(1)	(2)
As_2O_5	38.96	40.08
SiO_2	0.26	
ZnO	56.78	56.78
H_2O	3.53	3.14
Total	99.53	100.00

(1) Mapimí, Mexico. (2) $Zn_2(AsO_4)(OH)$.

Polymorphism & Series: Dimorphous with paradamite; forms a series with olivenite.

Occurrence: A secondary mineral in the oxidized zone of zinc- and arsenic-bearing hydrothermal mineral deposits.

Association: Smithsonite, hemimorphite, scorodite, olivenite, calcite, quartz, Fe–Mn oxides.

Distribution: A number of localities; some for studied material or fine specimens include: from Chañarcillo, south of Copiapó, Atacama, Chile. In Mexico, large crystals at the Ojuela mine, Mapimí, Durango; in the Hidalgo mine, Zimapán, Hidalgo; and from Santa Eulalia, Chihuahua. In the USA, at Gold Hill, Tooele Co., Utah, and in the Mohawk mine, Clark Mountains, San Bernardino Co., California. At the Cap Garonne mine, near le Pradet, Var, France. From Reichenbach, near Bensheim, Hesse, and in the Clara mine, near Oberwolfach, Black Forest, Germany. In England, from several places in Cornwall, and at Caldbeck Fells, Cumbria. In the Kamariza mine, Laurium, Greece. Large crystals from Tsumeb, Namibia. At the Puttapa zinc mine, near Beltana, and on Mt. Painter, Flinders Ranges, South Australia.

Name: Honoring Gilbert-Joseph Adam (1795–1881), French mineralogist, who supplied the first specimens.

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