Zincolivenite $CuZn(AsO_4)(OH)$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As sprays of prismatic crystals to 2 mm.

Physical Properties: *Cleavage*: Perfect on (010), imperfect on (101). *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = 3.5 D(meas.) = 4.34(15) D(calc.) = 4.330

Optical Properties: Translucent. *Color*: Green or greenish blue. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). α = 1.736(2) β = 1.784(2) γ = 1.788(2) 2V(meas.) = 30(5)° 2V(calc.) = 31.5° *Orientation*: *X* = *b*, *Y* = *a*, *Z* = *c*. *Pleochroism*: Very weak, *X* = light bluish green, *Y* = *Z* = light blue. *Dispersion*: Very strong, *r* > *v*. Parallel extinction.

Cell Data: *Space Group*: *Pnnm*. *a* = 8.5839(13) *b* = 8.5290(13) *c* = 5.9696(9) Z = 4

X-Ray Diffraction Pattern: Kamariza dump, Lavrion deposit, Attika Prefecture, Greece. 3.002 (100), 2.456 (94), 2.437 (86), 2.690 (67), 4.860 (64), 6.00 (54), 2.662 (53)

Chemistry:

	(1)
CuO	26.33
ZnO	29.62
FeO	0.55
As_2O_5	39.94
P_2O_5	0.41
H_2O	3.83
Total	100.68

(1) Kamariza dump, Lavrion deposit, Attika Prefecture, Greece; average electron microprobe analysis supplemented by IR spectroscopy, H_2O by the Alimarin method; corresponds to $Cu_{0.94}Zn_{1.03}Fe_{0.02}[(AsO_4)_{0.98}(PO_4)_{0.02}](OH)_{0.98}(H_2O)_{0.10}$.

Polymorphism & Series: Solid solution series with adamite.

Mineral Group: Adamite group.

Occurrence: Secondary in weathered tennantite deposits.

Association: Jarosite, conichalcite, alumopharmacosiderite, arseniosiderite, scorodite, 'limonite' (Lavrion); azurite, tyrolite (Dolyhir quarry); philipsburgite, zálesíite (Potts Gill mine); azurite, duftite, mimetite, baryte, tennantite (Stennerskeugh Clouds mine).

Distribution: From the Kamariza dump, Lavrion deposit, Attika Prefecture, Greece. At Penberthy Croft mine and Wheal Phoenix, Cornwall; at Dolyhir quarry, Powys; at Ecton Hill, Staffordshire; at Potts Gill, Sandbed and Driggith mines (and several smaller trials) in the Caldbeck Fells, Cumbria; at High Longrigg mine and Stennerskeugh Clouds mine, Kirkby Stephen, Cumbria, Britain; and at Tynagh mine, Co. Galway, Ireland.

Name: The prefix identifies the *zinc*-dominant analogue of *olivenite*. Formerly 'cuproadamite'.

Type Material: Mining and Technology University, Freiberg, Germany (81475).

References: (1) Chukanov, N.V., D.Y. Pushcharovsky, N.V. Zubkova, I.V. Pekov, M. Pasero, S. Merlino, S. Möckel, M.Kh. Rabadanov, and D.I. Belakovskiy (2007) Zincolivenite $CuZn(AsO_4)(OH)$: a new adamite-group mineral with ordered distribution of Cu and Zn. Doklady Earth Sciences, 415A, 841-845. (2) Braithwaite, R.S.W., D.I. Green, and A.G. Tindle (2009) The distribution and composition of adamite and zincolivenite in Britain and Ireland. J. Russell Society, 12, 3-9.