Arsenohopeite $Zn_3(AsO_4)_2 \cdot 4H_2O$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As a polycrystalline grain to 1 mm.

Physical Properties: *Cleavage*: Perfect on {010}, good on {100}, poor on 01} (by analogy with hopeite). *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = 3 D(meas.) = n.d. D(calc.) = 3.42

Optical Properties: Transparent. *Color*: Colorless to blue, colorless in transmitted light. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (-). α = 1.598(2) β = 1.606(2) γ = 1.613(2) 2V(meas.) = n.d. 2V(calc.) = 86°

Cell Data: *Space Group*: *Pnma*. a = 10.804(2) b = 19.003(4) c = 5.112(1) Z = 4

X-ray Powder Pattern: Calculated pattern.
9.502 (100), 2.926 (95), 4.937 (50), 4.110 (48), 5.196 (31), 3.567 (31), 4.490 (28)

Chemistry:

	(1)	(2)
ZnO	44.92	44.72
Fe_2O_3	0.92	
MnO	0.51	
MgO	0.20	
CuO	0.02	
As_2O_5	45.84	42.09
H_2O	[14.21]	13.19
Total	106.62	100.00

(1) Tsumeb, Namibia; average of 8 electron microprobe analyses; H_2O calculated and confirmed by Raman spectroscopy, high Total attributed to dehydration under the electron beam; corresponding to $(Zn_{2.80}Fe_{0.06}Mn_{0.04}Mg_{0.03})_{\Sigma=2.93}(As_{1.01}O_4)_2 \cdot 4H_2O$. (2) $Zn_3(AsO_4)_2 \cdot 4H_2O$.

Occurrence: A rare secondary mineral formed by alteration of tennantite-rich ore in the oxidized zone of a dolostone-hosted, polymetallic, hydrothermal ore deposit.

Association: Köttigite, adamite, leiteite, schneiderhöhnite.

Distribution: Tsumeb, Namibia.

Name: For the relationship to *hopeite* $[Zn_3(PO_4)_2 \cdot 4H_2O]$, as its arsenate analogue.

Type Material: Natural History Museum, Vienna, Austria (N 8167).

References: (1) Neuhold, F., U. Kolitsch, H.-J. Bernhardt, and C.L. Lengauer (2012) Arsenohopeite, a new zinc arsenate mineral from the Tsumeb mine, Namibia. Mineral. Mag., 76, 603-612. (2) (2012) Amer. Mineral., 97, 1524 (abs. ref. 1).