Domerockite $Cu_4(AsO_4)(AsO_3OH)(OH)_3 \cdot H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As equant, short prismatic or tabular crystals to 0.3 mm, generally arranged in subparallel aggregates. Crystals display {100}, {010}, {001}, {212}, {$0\bar{1}$ 1}, and {$0\bar{1}$ 2}.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = ~ 3 D(meas.) = n.d. D(calc.) = 4.44

Optical Properties: Translucent. *Color*: Bluish green. *Streak*: Pale green. *Luster*: Vitreous. *Optical Class*: Biaxial (–). α = 1.798(4) β = 1.814(4) γ = 1.817(4) 2V(calc.) = 46° *Pleochroism*: Very weak , *X* = pale greenish yellow, *Y* = greenish blue, *Z* = greenish blue. *Absorption*: *X* < *Y* = *Z*.

Cell Data: *Space Group*: $P\bar{1}$. a = 5.378(11) b = 8.962(18) c = 9.841(2) α = 75.25(3)° β = 83.56(3)° γ = 79.97(3)° Z = 2

X-ray Powder Pattern: Dome Rock Mine, South Australia.
3.073 (100), 3.119 (60), 2.464 (50), 2.856 (40), 2.443 (40), 4.716 (30), 3.605 (30)

Chemistry:	(1)	(2)
CuO	52.04	52.85
ZnO	0.78	
BaO	0.11	
As_2O_5	37.67	38.17
P_2O_5	0.32	
SiO_2	0.24	
H_2O	[8.84]	8.98
Total	100.00	100.00

(1) Dome Rock Mine, South Australia; average of 14 electron microprobe analyses, H_2O by difference, AsO_4, OH, H_2O confirmed by Raman and FTIR spectroscopy; corresponding to $(Cu_{3.94}Zn_{0.06})_{\Sigma=4.00}H_{0.91}(As_{1.97}P_{0.03}Si_{0.02})_{\Sigma=2.02}O_8(OH)_{3.00} \cdot H_2O$. (2) $Cu_4(AsO_4)(AsO_3OH)(OH)_3 \cdot H_2O$.

Occurrence: A secondary mineral in a weathered Cu As sulfide deposit.

Association: Cobaltaustinite, agardite-(Y), arseniosiderite, clinoclase, erythrite, lavendulan, metazeuneite, olivenite, scorodite, smolyaninovite.

Distribution: From the Dome Rock Mine, Bush Heritage reserve, 42 km north of Mingary railway siding and ~470 km northeast of Adelaide, South Australia.

Name: For the mine that produced the first specimens.

Type Material: Department of Mineralogy, South Australian Museum, Adelaide, South Australia (G32329).

References: (1) Elliott, P., U. Kolitsch, A.C. Willis, and E. Libowitzky (2013) Description and crystal structure of domerockite, $Cu_4(AsO_4)(AsO_3OH)(OH)_3 \cdot H_2O$, a new mineral from the Dome Rock Mine, South Australia. Mineral. Mag., 77(4), 509-522. (2) (2015) Amer. Mineral., 100, 2006-2007 (abs. ref. 1).