Cloncurryite $Cu_{0.5}(VO)_{0.5}Al_2(PO_4)_2F_2 \cdot 5H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As aggregates of acicular crystals to 1 mm, elongated along [100]. *Twinning*: On {100}.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = 2 D(meas.) = n.d. D(calc.) = 2.525 Non-fluorescent.

Optical Properties: Transparent. *Color*: Sky-blue. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-) $\alpha = 1.541(2)$ $\beta = 1.548(2)$ $\gamma = 1.550(2)$ 2V(calc.) = 56° *Orientation*: $X = a$, $Y = b$, $Z = c$. *Pleochroism*: Faint, but distinct; $Y = Z$ = pale blue, X = very pale greenish blue. *Dispersion*: $r < v$, very weak.

Cell Data: *Space Group*: $P2/c$. $a = 4.9573(2)$ $b = 12.1824(4)$ $c = 18.9749(8)$ $\beta = 90.933(6)°$ Z = 4

X-Ray Diffraction Pattern: Great Australia mine, Cloncurry, Queensland, Australia. 6.101 (100), 5.621 (91), 9.515 (67), 3.976 (21), 3.338 (21), 4.753 (17), 3.163 (17) [Distinguished from nevadaite by analytical confirmation of the presence of VO^{2+} and the presence of the 5.832 (6) reflection in X-ray powder diffraction data.]

Chemistry:

	(1)
CuO	10.29
VO_2	8.32
Al_2O_3	23.63
Fe_2O_3	0.32
P_2O_5	32.54
F	4.34
H_2O	[22.4]
-O = F	1.83
Total	100.00

(1) Great Australia mine, Cloncurry, Queensland, Australia; average electron microprobe analysis supplemented by Raman spectroscopy, H_2O by difference; corresponds to $[Cu_{0.56}(VO)_{0.44}]_{\Sigma=1.00}(Al_{2.02}Fe_{0.02})_{\Sigma=2.04}(PO_4)_2F_{1.00}(OH)_{1.00} \cdot 4.92H_2O$.

Occurrence: A product of the weathering in silicified goethite-hematite gossan.

Association: Malachite, pseudomalachite, cuprite, native copper.

Distribution: From the B Tangye lode, Great Australia mine, Cloncurry, Queensland, Australia.

Name: For the town of *Cloncurry*, near where specimens were first collected.

Type Material: Geosciences Department, Museum Victoria, Australia (M49502).

References: (1) Colchester, D.M., P. Leverett, A.R. McKinnon, J.L. Sharpe, P.A. Williams, D.E. Hibbs, P. Turner, and V.H. Hoppe (2007) Cloncurryite,$Cu_{0.56}(VO)_{0.44}Al_2(PO_4)_2(F,OH)_2 \cdot 5H_2O$, a new mineral from the Great Australia mine, Cloncurry, Queensland, Australia, and its relationship to nevadaite, Australian J. Mineral., 13(1), 5-13.