Kernowite $Cu_2Fe(AsO_4)(OH)_4 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Massive.

Physical Properties: *Cleavage*: n.d. *Tenacity*: n.d. *Fracture*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 3.048

Optical Properties: Translucent. *Color*: Dark green. *Streak*: n.d. *Luster*: n.d.
Optical Class: n.d.

Cell Data: *Space Group: I*2/*a* (*C*2/*c*). $a = 12.9243(4)$ $b = 7.5401(3)$ $c = 10.0271(3)$ $\beta = 91.267(3)°$
$Z = 4$

X-Ray Diffraction Pattern: Wheal Gorland mine, Parish of St. Day, Cornwall, United Kingdom.
6.560 (100), 6.067 (91), 3.066 (41), 3.035 (33), 2.841 (30), 3.970 (28), 2.728 (27)

Chemistry:

	(1)
Fe_2O_3	15.38
CuO	36.00
As_2O_5	31.12
Al_2O_3	1.15
CaO	0.02
SiO_2	0.09
H_2O	[24.69]
Total	104.55

(1) Wheal Gorland mine, Parish of St. Day, Cornwall, United Kingdom; average electron microprobe analysis supplemented by Raman spectroscopy; corresponds to $Cu_{1.88}(Fe_{0.79}Al_{0.09})_{\Sigma=0.88}(As_{1.12}O_4)(OH)_4 \cdot 3.65H_2O$.

Occurrence: Secondary in cavities in quartz-gossan, rich in undifferentiated micro-crystalline gray sulfides. Perhaps related closely to the formation of arsenic-rich gels/mineraloids.

Association: Liroconite, poorly crystalline arsenic phases including pharmacosiderite and olivenite-group minerals.

Distribution: Found in a museum specimen from the collections of Sir Arthur Russel, and before him, of the Cornish mineral collector and Member of Parliament, Philip Rashleigh (1729-1811) and labeled as liroconite. Estimated as being from the Wheal Gorland mine, Parish of St. Day, Cornwall, United Kingdom.

Name: After the world for Cornwall in the Cornish language (*Kernow*). The Fe^{3+}-analogue of liroconite.

Type Material: Natural History Museum, London, England (BM1964, R8908).

References: (1) Rumsey, M.S., M.D. Welch, J. Spratt, A.K. Kleppe, and M. Števko (2021) Kernowite, $Cu_2Fe(AsO_4)(OH)_4 \cdot 4H_2O$, the Fe^{3+}-analogue of liroconite from Cornwall, UK. Mineral. Mag., 85, 283-290.