Bleasdaleite $(Ca,Fe^{3+})_2Cu_5(Bi,Cu)(PO_4)_4(H_2O,OH,Cl)_{13}$

Crystal Data: Monoclinic [pseudotetragonal]. *Point Group*: 2/*m*. As thin tabular crystals, to 20 μm, that form scaly crusts, rosettes and hemispherical aggregates to 100 μm.

Physical Properties: *Cleavage*: Well developed on {001}. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 2 D(meas.) = n.d. D(calc.) = 2.77

Optical Properties: Transparent. *Color*: Dark brown. *Streak*: Pale brown. *Luster*: Resinous. *Optical Class*: Biaxial (-). α = 1.718(4) β = 1.748(3) γ = 1.748(3) 2V(calc.) = ~ 0° *Orientation*: *X = c, Y/ Z = a/b*. *Pleochroism:* Medium strong, *X* = pale yellow-brown, *Y* = *Z* = dark yellow-brown. *Absorption*: *X < Y = Z.*

Cell Data: *Space Group*: *C*2/*m*. *a* = 14.200(7) *b* = 13.832(7) *c* = 14.971(10) β = 102.08(8)° Z = 4

X-ray Powder Pattern: Lake Boga, Victoria, Australia.
14.57 (100), 6.95 (40), 6.28 (40), 2.816 (40), 3.469 (30b), 2.507 (30), 2.452 (30)

Chemistry:

	(1)
CaO	7.59
CuO	34.79
Bi_2O_3	15.53
Fe_2O_3	3.04
Al_2O_3	0.13
P_2O_5	21.70
As_2O_5	0.34
Cl	1.01
H_2O	16.10
-O = Cl	0.23
Total	100.00

(1) Lake Boga, Victoria, Australia; electron microprobe analysis, H_2O by difference; corresponding to $(Ca_{1.63}Fe^{3+}_{0.46})_{\Sigma=2.09}Cu_5(Bi_{0.80}Cu_{0.25})_{\Sigma=1.05}[(PO_4)_{3.67}(AsO_4)_{0.04}]_{\Sigma=3.71}[Cl_{0.34}(OH)_{6.15}]\cdot 7.7H_2O$.

Occurrence: A secondary mineral from cavities in weathered uraniferous granitic pegmatite containing partly oxidized copper sulfide minerals.

Association: n.d.

Distribution: From Lake Boga, Swan Hill Rural City, Victoria, Australia.

Name: Honors the Reverend John I. Bleasdale (1822-1884) for of his promotion of mineralogy in Victoria.

Type Material: Museum of Victoria, Melbourne (M44699), and in the South Australian Museum, Adelaide, Australia.

References: (1) Birch, W.D., A. Pring, and U. Kolitsch (1999) Bleasdaleite, $(Ca,Fe^{3+})_2Cu_5(Bi,Cu)(PO_4)_4(H_2O,OH,Cl)_{13}$, a new mineral from Lake Boga, Victoria, Australia. Austral. J. Mineral., 5(2), 69-75. (2) (2000) Amer. Mineral., 85, 1321 (abs. ref. 1).