Bariandite $Al_3(V^{5+},V^{4+})_{40}O_{100}\cdot 45H_2O$

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* m or $2/m$. Crystals elongated ‖ [010], forming fibers, platy on {001}, to 3 mm; in sheeted aggregates of parallel fibers, such layers sometimes stacked.

Physical Properties: *Cleavage:* {001}, perfect. Hardness = n.d. D(meas.) = ∼2.7 D(calc.) = 2.50

Optical Properties: Nearly opaque. *Color:* Black to dark green; in reflected light shows green internal reflections.
Optical Class: Biaxial. *Pleochroism:* Greenish brown ‖ [010], bottle-green ⊥ [010] in transmitted light; strong in brownish gray under reflected light. $n = > 1.85$ 2V(meas.) = n.d.

Cell Data: *Space Group:* Cc or $C2/c$. $a = 11.70(3)$ $b = 3.63(1)$ $c = 20.06(5)$ $\beta = 101°30(20)'$ Z = 2

X-ray Powder Pattern: Mounana mine, Gabon.
14.20 (FFF), 3.480 (F), 3.430 (F), 5.72 (mF), 2.852 (mF), 1.939 (mF), 1.827 (mF)

Chemistry:

	(1)
V_2O_5	63.26
V_2O_4	14.19
Al_2O_3	3.75
Fe_2O_3	0.17
H_2O	18.11
Total	[99.48]

(1) Mounana mine, Gabon; original total given as 100.08%; corresponds to $Al_{0.68}[(V^{5+},V^{4+})_{7.90}Fe^{3+}_{0.02}]_{\Sigma=7.92}O_{20}\cdot 9.14H_2O$.

Occurrence: In the oxidation zone of a uranium mineral deposit (Mounana mine, Gabon); in the oxidation zone of a vanadium deposit (Minasragra, Peru).

Association: Duttonite, lenoblite (Mounana mine, Gabon); roscoelite, gypsum (Minasragra, Peru).

Distribution: From the Mounana uranium mine, Franceville, Gabon. At Minasragra, 46 km from Cerro de Pasco, Peru.

Name: To honor Dr. Pierre Bariand (1933–), Curator of Mineralogy, University of Paris, Paris, France.

Type Material: National School of Mines, Paris, France; The Natural History Museum, London, England, 1970,151.

References: (1) Cesbron, F. and H. Vachey (1971) La bariandite, nouvel oxyde hydraté de vanadium (IV) et (V). Bull. Soc. fr. Minéral., 94, 49–54 (in French with English abs.). (2) (1972) Amer. Mineral., 57, 1555 (abs. ref. 1). (3) Evans, H.T., Jr. and J.M. Hughes (1990) Crystal chemistry of the natural vanadium bronzes. Amer. Mineral., 75, 508–521, esp. 515, 517.