Billietite $Ba(UO_2)_6O_4(OH)_6{\cdot}8H_2O$

Crystal Data: Orthorhombic. *Point Group*: *mm*2. Crystals pseudohexagonal, tabular on {001}, may be elongated along [110], to 5 mm. *Twinning*: Very common, on {110} and {111}, the latter producing sector-twinned aragonitelike groups.

Physical Properties: *Cleavage*: {001} perfect, {110} and {010} imperfect. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = 5.28-5.36 D(calc.) = 5.25 Radioactive.

Optical Properties: Transparent to translucent. *Color*: Yellow to golden yellow and amber-yellow. *Luster*: Adamantine.
Optical Class: Biaxial (–). α = 1.725-1.730 β = 1.780-1.822 γ = 1.790-1.829 2V(meas.) = ~36°
Pleochroism: Distinct; *X* = colorless to pale yellow; *Y* = *Z* = greenish yellow to deep golden yellow, amber-brown. *Orientation*: *X* = *c*; *Y* = *a*; *Z* = *b*. *Dispersion*: *r* > *v*, very strong.

Cell Data: *Space Group*: $Pbn2_1$. *a* = 12.0941(8) *b* = 30.211(2) *c* = 7.1563(5) Z = 4

X-ray Powder Pattern: Shinkolobwe, Congo.
7.53 (10), 3.77 (9), 3.17 (8), 2.03 (6), 3.54 (5), 2.49 (4), 2.56 (3)

Chemistry:

	(1)	(2)	(3)
UO_3	82.76	84.39	83.00
SiO_2	0.76		
CaO	0.30		
BaO	6.88	7.41	7.42
H_2O	8.97	8.68	9.58
Total	99.67	100.48	100.00

(1-2) Shaba Province, Congo. (3) $Ba(UO_2)_6O_4(OH)_6{\cdot}8H_2O$.

Occurrence: An uncommon alteration product of uraninite.

Association: Uranophane, fourmarierite, metatorbernite, rutherfordine, becquerelite, studtite, soddyite.

Distribution: From Shinkolobwe and in the Musonoi mine, near Kolwezi, Katanga Province, Congo (Shaba Province, Zaire). From the La Crouzille mine, and the Margnac mine, Compreignac, Haute-Vienne, and in the Rabéjac uranium deposit, seven km south-southeast of Lodève, Hérault, France. In Germany, at Wölsendorf, Bavaria; from Menzenschwand, and at Wittichen, Black Forest; and at Bergen, Vogtland, Saxony. On Mauch Chunk Ridge, Jim Thorpe, Carbon Co., Pennsylvania, and in the Delta mine, Emery Co., Utah, USA.

Name: Honors Valère Louis Billiet (1903-1945), Belgian crystallographer, University of Ghent, Ghent, Belgium.

Type Material: Harvard University, Cambridge, Massachusetts, 104455; National Museum of Natural History, Washington, D.C., USA, 160496.

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