

Bijvoetite-(Y)**(Y, Dy)₈(UO₂)₁₆(CO₃)₁₆O₈(OH)₈•39H₂O**

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Crystal Data: Orthorhombic. *Point Group:* *mm*2. Platy crystals, flattened on {001} and elongated along [110], showing { $\bar{1}10$ }, { $\bar{1}30$ }, {010}, {130}, { $1\bar{1}0$ }, to 3 mm.

Physical Properties: *Cleavage:* On {001}, good. Hardness = 2 VHN = 36
D(meas.) = n.d. D(calc.) = 3.907 Radioactive.

Optical Properties: Transparent to translucent. *Color:* Sulfur-yellow. *Luster:* Vitreous.
Optical Class: Biaxial (+). *Pleochroism:* X = colorless; Y = pale yellow; Z = deep yellow. *Orientation:* X = c; Y = a; Z = b; Z $\wedge$ [110] = 25.1°. α = 1.600(2) β = 1.650(2) γ = 1.722(2) 2V(meas.) = 84° 2V(calc.) = 83°

Cell Data: *Space Group:* *C*2*ma*, *C*2*m*b, or *C*222₁. *a* = 21.22(3) *b* = 45.30(7)
c = 13.38(2) *Z* = 4

X-ray Powder Pattern: Shinkolobwe, Congo.

6.70 (100), 8.61 (80), 4.16 (60), 2.996 (60), 3.52 (50), 3.36 (50), 3.111 (40)

Chemistry:

	(1)
UO ₃	60.66
CO ₂	8.88
Y ₂ O ₃	7.52
Gd ₂ O ₃	2.80
Tb ₂ O ₃	0.96
Dy ₂ O ₃	5.61
H ₂ O	[13.57]
Total	[100.00]

(1) Shinkolobwe, Congo; by electron microprobe, CO₂ by chromatography, H₂O by difference; corresponds to (Y_{4.57}Dy_{2.06}Gd_{1.06}Tb_{0.36}) $\Sigma=8.05$ (UO₂)_{14.54}(CO₃)_{13.83}O₈(OH)_{9.57}•38.86H₂O.

Occurrence: Very rare, in the lower portion of the oxidation zone developed above uraninite-bearing dolomitic rocks.

Association: Lepersonnite-(Gd), sklodowskite, curite, uranophane, becquerelite, rutherfordine, studtite, torbernite, soddyite, kasolite, schoepite, oursinite.

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire).

Name: Honors Professor Johannes Martin Bijvoet (1892–1980), Dutch crystallographer.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RMG13781.

References: (1) Deliens, M. and P. Piret (1982) Bijvoetite et lepersonnite, carbonates hydratés d'uranyle et de terres rares de Shinkolobwe, Zaïre. *Can. Mineral.*, 20, 231–238 (in French with English abs.). (2) (1983) *Amer. Mineral.*, 68, 1248 (abs. ref. 1). (3) Y. Li, P.C. Burns, and R.A. Gault (2000) A new rare-earth-element uranyl carbonate sheet in the structure of bijvoetite-(Y). *Can. Mineral.*, 38, 153–162.