Hechtsbergite $Bi_2O(VO_4)(OH)$

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. As rounded or etched crystals, dominantly {111}, with {112}, {113}, {$\bar{1}$01}, {$\bar{1}$02}, {$\bar{3}$02}, to 0.2 mm, commonly in aggregates.

Physical Properties: *Fracture:* Conchoidal. Hardness = 4.5 VHN = 320 (15 g load). D(meas.) = n.d. D(calc.) = 6.87

Optical Properties: Transparent to translucent. *Color:* Brown. *Streak:* Yellow. *Luster:* Adamantine.
Optical Class: Biaxial (+). *Orientation:* $X = b$; $Z \wedge c \simeq 35°$. $\alpha = 2.26(2)$ $\beta = [2.27]$ $\gamma = 2.30(2)$ 2V(meas.) = 50(5)°

Cell Data: *Space Group:* $P2_1/c$. $a = 6.791(1)$ $b = 7.535(1)$ $c = 10.881(1)$ $\beta = 107.00(1)°$ Z = 4

X-ray Powder Pattern: Hechtsberg quarry, Germany.
3.267 (100), 3.150 (63), 4.279 (41), 2.734 (35), 2.036 (29), 2.549 (27), 2.133 (27)

Chemistry:

	(1)	(2)
As_2O_5	0.52	
V_2O_5	15.18	16.07
Bi_2O_3	83.02	82.34
H_2O	[1.59]	1.59
Total	[100.31]	100.00

(1) Hechtsberg quarry, Germany; by electron microprobe, H_2O from theory; corresponds to $Bi_{2.03}O_{1.08}[(VO_4)_{0.95}(AsO_4)_{0.03}]_{\Sigma=0.98}(OH)_{1.01}$. (2) $Bi_2O(VO_4)(OH)$.

Occurrence: In cavities in gneiss.

Association: Bismutite, namibite, eulytite, mixite, beyerite, chrysocolla.

Distribution: In the Hechtsberg quarry, near Hausach, Black Forest, Germany.

Name: For the Hechtsberg quarry, Germany, source of the first specimens.

Type Material: Institute for Mineralogy, Ruhr University, Bochum, Germany.

References: (1) Krause, W., H.-J. Bernhardt, G. Blass, H. Effenberger, and H.-W. Graf (1997) Hechtsbergite, $Bi_2O(OH)(VO_4)$, a new mineral from the Black Forest, Germany. Neues Jahrb. Mineral., Monatsh., 271–287. (2) (1998) Amer. Mineral., 83, 400–401 (abs. ref. 1).