

Schneebergite**BiCo₂(AsO₄)₂[(H₂O)(OH)]**

Crystal Data: Monoclinic. *Point Group:* 2/m. As crystals, to 0.5 mm, elongated along [010] and tabular on { $\bar{2}$ 01}, showing {001}, { $\bar{1}$ 02}, and { $\bar{1}$ 11}, and in aggregates to 1 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 4-4.5 VHN = 250 (15 g load). D(meas.) = n.d. D(calc.) = 5.28

Optical Properties: Transparent. *Color:* Brown to beige (varies with Fe content). *Streak:* Pale brown to nearly white. *Luster:* Adamantine. *Optical Class:* Biaxial (+). α (calc.) = 1.93 β = 1.95(1) γ = 1.98(2) 2V(meas.) = 85(5)° *Orientation:* $Y = b$, $X \approx c$. *Pleochroism:* Distinct; $X = Z$ = pale yellow, Y = brown.

Cell Data: Space Group: $C2/m$. $a = 9.005(1)$ $b = 6.211(1)$ $c = 7.440(1)$ $\beta = 115.19(1)^\circ$ $Z = 2$

X-ray Powder Pattern: "Am Roten Berg", Schneeberg, Saxony, Germany. 3.193 (100), 2.971 (92), 2.498 (62), 4.598 (61), 2.820 (61), 2.702 (57), 1.704 (52)

Chemistry:	(1)	(2)
CaO	2.72	2.65
NiO	9.35	9.34
CoO	13.31	13.17
ZnO	<0.05	
PbO	0.11	
Fe ₂ O ₃	2.95	2.97
Bi ₂ O ₃	29.01	28.35
P ₂ O ₅	<0.05	
As ₂ O ₅	38.42	38.85
SO ₃	0.11	
H ₂ O	4.40	4.66
Total	100.38	100.00

(1) "Am Roten Berg", Schneeberg, Saxony, Germany; average of 12 electron microprobe analyses, supplemented by Fourier transform infrared spectroscopy, H₂O by TGA; corresponds to (Bi_{0.74}Ca_{0.29}) $\Sigma=1.03$ (Co_{1.06}Ni_{0.75}Fe_{0.22}) $\Sigma=2.03$ [(AsO₄)_{1.99}(SO₄)_{0.01}] $\Sigma=2.00$ [(OH)_{1.09}(H₂O)_{0.91}] $\Sigma=2.00$.
 (2) BiCo₂(AsO₄)₂[(H₂O)(OH)].

Polymorphism & Series: Probably complete solid solution involving schneebergite, nickelschneebergite, cobaltlotharmeyerite, and nickellotharmeyerite.

Mineral Group: Tsumcorite group.

Occurrence: In oxidized mining waste.

Association: Nickelschneebergite, quartz, scorodite, barium-pharmacosiderite, ferrilotharmeyerite, preisingerite, waylandite.

Distribution: From dump material in the "Am Roten Berg" mining area, ~5 km southwest of Schneeberg, Saxony, Germany.

Name: Recognizes the 600-year mining activity of the *Schneeberg* region in Saxony, Germany, the locality that provided the first specimens of the species.

Type Material: State Museum of Mineralogy and Geology, Dresden, Germany (18332).

References: (1) Krause, W., H.-J. Bernhardt, H. Effenberger, and T. Witzke (2002) Schneebergite and nickelschneebergite from Schneeberg, Saxony, Germany: the first Bi-bearing members of the tsumcorite group. *Eur. J. Mineral.*, 14, 115-126. (2) (2003) *Amer. Mineral.*, 88, 253 (abs. ref. 1).