

**Crystal Data:** Hexagonal. *Point Group:* 3m. As very tightly bound sheaves, to 1 mm composed of parallel acicular crystals to 100  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3-4  
D(meas.) = n.d. D(calc.) = 7.179

**Optical Properties:** Transparent to translucent (bundles). *Color:* Yellow to dirty yellow-brown; gray to purplish gray with strong yellow internal reflections in reflected light.

*Streak:* Bright yellow. *Luster:* Resinous.

*Optical Class:* Uniaxial.  $n(\text{calc.}) = 2.33$  and  $2.37$  *Birefractance:* Very weak.

$R_1$ - $R_2$ : (470) 17.9-18.6 (6.11-6.65)<sub>oil</sub>, (546) 16.45-17.0 (5.43-5.94)<sub>oil</sub>, (589) 16.0-16.5 (5.19-5.67)<sub>oil</sub>, (650) 15.7-16.2 (5.00-5.57)<sub>oil</sub>

**Cell Data:** *Space Group:* P31c.  $a = 15.067(3)$   $c = 15.293(4)$   $Z = 2$

**X-ray Powder Pattern:** Lavra da Posse, São José de Brejaúba, Minas Gerais, Brazil.  
3.382 (100), 2.681 (70), 7.650 (50), 1.701 (50), 3.812 (40), 2.175 (40), 2.106 (40)

Chemistry:	(1)	(2)
$\text{Bi}_2\text{O}_3$	85.06	86.03
$\text{CrO}_3$	11.65	12.31
$\text{V}_2\text{O}_5$	0.59	
$\text{H}_2\text{O}$	[1.67]	1.67
Total	98.97	100.00

(1) Lavra da Posse, São José de Brejaúba, Minas Gerais, Brazil; average electron microprobe analysis,  $\text{H}_2\text{O}$  calculated; corresponds to  $\text{Bi}^{3+}_{23.95}(\text{Cr}^{6+}_{7.64}\text{V}^{5+}_{0.43})_{\Sigma=8.07}\text{O}_{56.84}(\text{OH})_{6.16} \cdot 3.01\text{H}_2\text{O}$ .

(2)  $\text{Bi}^{3+}_{24}\text{Cr}^{6+}_8\text{O}_{57}(\text{OH})_6(\text{H}_2\text{O})_3$ .

**Occurrence:** On a museum specimen of pucherite.

**Association:** Pucherite, schumacherite, bismutite, hechtsbergite.

**Distribution:** At Lavra da Posse, São José de Brejaúba, Conceição do Mato Dentro County (specimen label indicates the São José Mine, Brejaúba), Minas Gerais, Brazil.

**Name:** For Duke University, Durham, North Carolina, USA, in whose collection the mineral was found and for the contributions of Duke family to the advancement of scientific knowledge.

**Type Material:** National Museum of Natural History, Washington D.C., USA (172012) and the Systematic Reference Series, National Mineral Collection of Canada, Geological Survey of Canada, Ottawa, Ontario (NMCC 68082).

**References:** (1) Burns, P.C., A.C. Roberts, J.A.R. Stirling, A.J. Criddle, and M.N. Feinglos (2000) Dukeite,  $\text{Bi}^{3+}_{24}\text{Cr}^{6+}_8\text{O}_{57}(\text{OH})_6(\text{H}_2\text{O})_3$ , a new mineral from Brejaúba, Minas Gerais, Brazil: Description and crystal structure. Amer. Mineral., 85, 1822-1827.