

**Crystal Data:** Tetragonal. *Point Group:*  $4/m\ 2/m\ 2/m$ . As acute needlelike crystals, up to 2 cm in length, elongated along [001]; also as radiating sprays. *Twinning:* Contact twinning reported.

**Physical Properties:** Hardness = n.d.  $D(\text{meas.}) = \text{n.d.}$   $D(\text{calc.}) = 4.165$  Extremely hygroscopic; readily soluble in cold H<sub>2</sub>O.

**Optical Properties:** Transparent. *Color:* Colorless; red from inclusions of amorphous selenium or yellowish from sulfur. *Luster:* Adamantine.

*Optical Class:* Uniaxial (+); determination of indices hindered by reaction with the immersion media. *Orientation:* Extinction parallel.  $n = > 1.80$ , moderate birefringence.

**Cell Data:** *Space Group:*  $P4_2/mbc$  (synthetic).  $a = 8.3622(7)$   $c = 5.0612(5)$   $Z = 8$

**X-ray Powder Pattern:** Synthetic.

3.008 (100), 3.742 (60), 4.180 (55), 3.227 (55), 2.531 (25), 1.933 (18), 1.883 (14)

**Chemistry:** Electron microprobe analyses found only selenium; identity with synthetic SeO<sub>2</sub> established by correspondence of other properties.

**Occurrence:** As a rare sublimation product of gases escaping through vents in actively burning culm banks in anthracite coal deposits; forms at about 200 °C near the vents.

**Association:** Selenium, rosickýite, mascagnite.

**Distribution:** In the USA, from coal waste piles at Glen Lyon, Luzerne Co., Williamstown, Dauphin Co., Forestville, Schuylkill Co., and Burnside, Northumberland Co., Pennsylvania.

**Name:** For Wayne F. Downey, Jr., of Harrisburg, Pennsylvania, USA, who first collected the mineral.

**Type Material:** n.d.

**References:** (1) Finkelman, R.B. and M.E. Mrose (1977) Downeyite, the first verified natural occurrence of SeO<sub>2</sub>. *Amer. Mineral.*, 62, 316–320. (2) Ståhl, K., J.P. Legros, and J. Galy (1992) The crystal structure of SeO<sub>2</sub> at 139 and 286 K. *Zeits. Krist.*, 202, 99–107. (3) (1969) NBS Mono. 25, 7, 60.