

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3} 2/m$ . As grains to 600  $\mu\text{m}$ . *Twining:* Polysynthetic.

**Physical Properties:** Hardness = 3.2 VHN = 63-96 D(meas.) = n.d. D(calc.) = 7.72

**Optical Properties:** Opaque. *Color:* Pale creamy yellow, pale yellow, pink, tarnishing more golden.

*Optical Class: Anisotropism:* Noticeable, distinctly stronger in oil, in yellowish gray tones.

R<sub>1</sub>-R<sub>2</sub>: (470) 51.2-52.9, (546) 49.8-51.5, (589) 50.1-51.5, (650) 50.1-51.6

**Cell Data:** *Space Group:*  $P\bar{3} m1$  (most probable).  $a = 8.412(6)$   $c = 19.63(3)$   $Z = [6]$

**X-ray Powder Pattern:** Kletno, Poland.

2.91 (100), 2.03 (30), 6.54 (20), 3.40 (20), 3.26 (18), 2.09 (18), 1.630 (6)

Chemistry:	(1)	(2)	(3)	(4)	(5)
Ag	22.31	22.6	22.9	20.47	22.7
Pb	1.34		0.0	0.17	
Cu	0.25		0.2	1.86	
Co	0.01				
Ni	0.02				
Bi	44.89	43.2	44.7	40.28	44.0
Se	28.46	32.8	30.8	33.01	33.3
Te				3.45	
S	2.47		1.2	0.28	
Total	99.75	98.6	99.8	100.85	100.0

(1) Kletno, Poland; by electron microprobe, average of three analyses, corresponding to  $(\text{Ag}_{0.98}\text{Cu}_{0.02})_{\Sigma=1.00}(\text{Bi}_{0.97}\text{Pb}_{0.03})_{\Sigma=1.00}(\text{Se}_{1.66}\text{S}_{0.34})_{\Sigma=2.00}$ . (2) Near Julianehåb, Greenland; by electron microprobe, corresponding to  $\text{Ag}_{1.01}\text{Bi}_{1.00}\text{Se}_{2.00}$ . (3) Kidd Creek mine, Canada; by electron microprobe, corresponding to  $(\text{Ag}_{0.99}\text{Cu}_{0.02})_{\Sigma=1.01}\text{Bi}_{1.00}(\text{Se}_{1.83}\text{S}_{0.17})_{\Sigma=2.00}$ . (4) Elatsite porphyry copper deposit, Bulgaria; electron microprobe analysis; corresponds to  $(\text{Ag}_{1.71}\text{Cu}_{0.26})_{\Sigma=1.97}(\text{Bi}_{1.73}\text{Fe}_{0.21}\text{Pb}_{0.01})_{\Sigma=1.95}(\text{Se}_{3.76}\text{Te}_{0.24}\text{S}_{0.08})_{\Sigma=4.08}$ . (5) AgBiSe<sub>2</sub>.

**Occurrence:** In a strongly cracked zone formed in crystalline limestone adjacent to magnetite-bearing skarns (Kletno, Poland); in reduction halos in red beds (near Zurich, Switzerland).

**Association:** Clausthalite, tiemannite, umangite, klockmannite, wittichenite, silver, naumannite, bornite, chalcopyrite, chalcocite, uraninite, fluorite, quartz (Kletno, Poland); tennantite, carrollite, cobaltite, bornite, chalcopyrite, chalcocite, naumannite, eucairite, clausthalite (Kidd Creek mine, Canada); hessite, chalcocite, digenite, umangite, naumannite, eucairite, bornite, chalcopyrite, clausthalite, covellite, magnetite, hematite, goethite, malachite, azurite (Julianehåb, Greenland).

**Distribution:** From Kletno, Sudetes Mountains, Poland [TL]. At the Clara mine, near Oberwolfach, the Mullenbach U deposit, Black Forest, and the Niederschlema-Alberoda U-Se-polymetallic deposit, Erzgebirge, Germany. Found northwest of Zurich, Switzerland. In Romania, at Ocna de Fier (Morávicza, Vaskő). In the Elatsite porphyry copper deposit, Bulgaria. At Kidd Creek mine, near Timmins, Ontario, Canada. In the Frederik VII's mine, 5 km east of Julianehåb, southern Greenland. Near Vanos, Chihuahua, Mexico. At Iron Monarch quarry, Iron Knob, South Australia.

**Name:** Honors Professor Karol Bohdanowicz (1864-1947), economic geologist of Cracow, Poland.

**Type Material:** Academy of Mining and Metallurgy, Cracow, Poland.

**References:** (1) Banaś, M., D. Atkin, J.F.W. Bowles, and P.R. Simpson (1979) Definitive data on bohdanowiczite, a new silver bismuth selenide. *Mineral. Mag.*, 43, 131-133. (2) (1979) *Amer. Mineral.*, 64, 1333 (abs. ref. 1). (3) Pringle, G.J. and R.I. Thorpe (1980) Bohdanowiczite, junoitte and laitakarite from the Kidd Creek mine, Timmins, Ontario. *Can. Mineral.*, 18, 353-360. (4) Schonwandt, H.K. (1983) Interpretation of ore microstructures from a seleneous Cu-mineralization in South Greenland. *Neues Jahrb. Mineral., Abh.*, 146, 302-332. (5) Geller, S. and

J.H. Wernick (1959) Ternary semiconducting compounds with sodium chloride-like structure: AgSbSe<sub>2</sub>, AgSbTe<sub>2</sub>, AgBiS<sub>2</sub>, AgBiSe<sub>2</sub>. *Acta Cryst.*, 12, 46-54. (6) Augé, T., R. Petrunov, and L. Bailly (2005) On the origin of the PGE mineralization in the Elatsite Porphyry Cu-Au deposit, Bulgaria: comparison with the Baula-Nuasahi complex, India, and other alkaline PGE-rich porphyries. *Can. Mineral.*, 43, 1355-1372.