Ramdohrite  
Ag$_3$Pb$_6$Sb$_{11}$S$_{24}$

Crystal Data: Monoclinic.  
Point Group: 2/m.  
Crystals are long prismatic or thick lance-shaped, from 0.5-1 cm.  
Twinning: Lamellar twinning on (010).

Tenacity: Brittle.  
Hardness = 2

$VHN = 206$ (20 g load).  
$D_{(meas.)} = 5.43$  
$D_{(calc.)} = 5.543$

Optical Properties: Opaque.  
Color: Gray-black; in polished section, white.  
Streak: Gray-black.

Luster: Metallic.  
Pleochroism: Very weak.  
Anisotropism: Moderate.

$R_1-R_2$: (400) 39.3-43.1, (420) 38.8-42.8, (440) 38.3-42.5, (460) 37.8-42.2, (480) 37.4-39.7, (500) 36.9-41.6, (520) 36.5-40.9, (540) 35.7-40.5, (560) 35.3-40.2, (600) 34.8-39.7, (620) 34.4-39.2, (640) 34.0-38.7, (660) 33.4-38.0, (680) 32.8-37.3, (700) 32.0-36.4

Cell Data:  
Space Group: $P2_1/n$.  
$\alpha = 19.3117(6)$  
$\beta = 13.0543(4)$  
$\gamma = 8.7348(3)$  
$\beta = 90.179(2)^\circ$  
$Z = 4$

X-ray Powder Pattern: Chocaya mine, Bolivia.  
3.32 (100), 2.94 (60), 2.78 (50), 2.21 (50), 3.48 (30), 3.04 (30), 3.82 (20)

Chemistry:  
(1) Chocaya mine, Bolivia; by electron microprobe.  
(2) Chocaya mine, Bolivia; by electron microprobe; corresponds to $Ag_{2.8}Pb_{5.9}Fe_{0.1}Mn_{0.1}In_{0.1}Cd_{0.2}Sb_{10.8}S_{24}$.  
(3) $Ag_3Pb_6Sb_{11}S_{24}$.

Occurrence: Found in fine-grained quartz in a hydrothermal vein (Chocaya mine, Bolivia).

Association: Pyrite, stannite, andorite, jamesonite, sphalerite, quartz (Chocaya mine, Bolivia); andorite (Bear Basin, Washington, USA).

Distribution: In Bolivia, from the Colorado Ag-Sn vein, Chocaya mine, Potosí, and from Tatasi.  
In the USA, at the Round Valley tungsten mine, Bishop Creek area, Inyo Co., California and at Bear Basin, King Co., Washington.

Name: Honors Professor Paul Ramdohr (1890-1985), German mineralogist.


References:  
(6) Makovicky, E. and W.G. Mumme (1983) The crystal structure of ramdohrite, Pb$_6$Sb$_{11}$Ag$_2$S$_{24}$, and its implications for the andorite group and zinckenite.  
(9) Makovicky, E., W.G. Mumme, and R.W. Gable (2013) The crystal structure of ramdohrite, Pb$_{5.9}Fe_{0.1}Mn_{0.1}In_{0.1}Cd_{0.2}Ag_{2.8}Sb_{10.8}S_{24}$: A new refinement. Amer. Mineral., 98, 773-779.