Quijarroite $Cu_6HgPb_2Bi_4Se_{12}$

Crystal Data: Orthorhombic. *Point Group*: *mm*2. As lath-shaped thin plates to 150 μm intimately (subparallel) intergrown with hansblockite or as sub- to anhedral grains to 200 μm. *Twinning*: Lamellar on {110} common; parquet twinning rare.

Physical Properties: *Cleavage*: None. *Fracture*: Irregular. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 5.771

Optical Properties: Opaque. *Color*: Black. *Streak*: Black. *Luster*: Metallic.
Optical Class: n.d. *Pleochroism*: Weak, cream to very slightly brownish cream.
Anisotropism: Moderate, pale orange brown to blue tints.
R_1-R_2: (400) 45.1-45.6, (420) 45.3-45.8, (440) 45.7-46.1, (460) 46.4-46.6, (470) 46.7-46.8, (480) 46.9-47.0, (500) 47.3-47.5, (520) 47.7-47.8, (540) 47.4-48.1, (546) 47.4-48.2, (560) 47.3-48.4, (580) 47.2-48.5, (589) 47.1-48.5, (600) 47.0-48.6, (620) 46.8-48.7, (640) 46.6-48.7, (650) 46.6-48.7, (660) 46.5-48.7, (680) 46.4-48.7, (700) 46.3-48.8

Cell Data: Space Group: $Pmn2_1$. a = 9.2413(8) b = 9.0206(7) c = 9.6219(8) Z = 1

X-ray Powder Pattern: El Dragón mine, Antonio Quijarro Province, Department of Potosí, Bolivia. 3.125 (100), 3.291 (90), 3.785 (60), 5.36 (55), 2.312 (50), 3.331 (40), 2.078 (35)

Chemistry:

	(1)	(2)
Cu	13.34	13.72
Ag	1.02	
Hg	7.67	7.22
Pb	16.87	14.91
Co	0.03	
Ni	0.15	
Bi	27.65	30.06
Se	33.52	34.09
Total	100.24	100.00

(1) El Dragón mine, Antonio Quijarro Province, Department of Potosí, Bolivia; average of 24 electron microprobe analyses; corresponds to $(Cu_{5.84}Ag_{0.26})_{\Sigma=6.10}(Hg_{1.06}Ni_{0.07}Co_{0.01})_{\Sigma=1.14}$ $Pb_{2.27}Bi_{3.68}Se_{11.81}$. (2) $Cu_6HgPb_2Bi_4Se_{12}$.

Occurrence: A primary mineral, deposited from an oxidizing, low-temperature hydrothermal fluid in a vein cutting pyrite-rich black shales and reddish-gray, hematite-bearing siltstones.

Association: Watkinsonite, clausthalite, eldragónite, krut'aite-penroseite, eskebornite, klockmannite, umangite, petrovicite, grundmannite, native gold.

Distribution: From the El Dragón mine, Antonio Quijarro Province, Department of Potosí, Bolivia.

Name: For the province, Antonio *Quijarro*, where the first specimens were collected.

Type Material: Natural History Museum, London, England (BM 2016, 26), the State Mineralogical Collection of Munich, Germany (MSM 73573), and the Florence Museum, Italy (3232/I).

References: (1) Förster, H.-J., L. Bindi, G. Grundmann, and C.J. Stanley (2016) Quijarroite, $Cu_6HgPb_2Bi_4Se_{12}$, a new selenide from the El Dragón Mine, Bolivia. Minerals, 6(4), 123. (2) (2020) Amer. Mineral., 105, 1116 (abs. ref. 1).