

Crystal Data: Monoclinic. *Point Group:* 2/m. As irregular masses intergrown with other minerals to ~0.5 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 3-3.5 VHN = 189-208, 200 average (50 g load). D(meas.) = n.d. D(calc.) = 6.04 Nearly impossible to discern from oscar Kempffite without further analysis (e.g. Sb/Bi ratio).

Optical Properties: Opaque. *Color:* Grayish black; grayish white in reflected light. *Streak:* Dark gray. *Luster:* Metallic.

Optical Class: n.d. *Pleochroism:* Distinct, white to gray tones. *Anisotropism:* Distinct, gray shades. R₁-R₂: (400) 43.0-47.5, (420) 38.4-44.9, (440) 37.3-44.3, (460) 37.3-44.0, (470) 37.4-44.1, (480) 37.4-43.9, (500) 37.2-43.0, (520) 36.9-42.9, (540) 36.3-42.9, (546) 36.2-42.7, (560) 36.2-42.5, (580) 36.1-42.2, (589) 36.1-42.1, (600) 35.9-41.8, (620) 36.0-42.3, (640) 35.7-41.8, (650) 35.6-42.0, (660) 35.5-41.7, (680) 35.2-41.2, (700) 35.3-41.7

Cell Data: Space Group: P2₁/c. *a* = 39.811(25) *b* = 19.280(12) *c* = 8.278(5) β = 96.195(9)° *Z* = 1

X-ray Powder Pattern: Calculated pattern.

3.329 (100), 2.882 (43), 2.871 (43), 3.367 (35), 3.362 (35), 2.984 (30), 2.972 (29)

Chemistry:	(1)	(2)
Cu	0.08	
Ag	14.31	14.08
Pb	10.66	10.82
Bi	33.56	32.74
Sb	21.39	22.26
<u>S</u>	<u>20.14</u>	<u>20.09</u>
Total	100.14	100.00

(1) Colorado vein, Animas mine, Chocaya Province, Department of Potosi, Sur Chichas, Bolivia; average of 6 electron microprobe analyses; corresponds to Cu_{0.12}Ag_{15.24}Pb_{5.88}Sb_{20.16}Bi_{18.48}S_{72.12}.

(2) Ag₁₅Pb₆Sb₂₁Bi₁₈S₇₂.

Polymorphism & Series: Lillianite homologous series.

Occurrence: In a hydrothermal Ag-Sn vein deposit.

Association: Aramayoite, oscar Kempffite, arsenopyrite, ferrokösterite, freibergite, miargyrite, pyrite, quartz.

Distribution: From the 264 level of the Colorado vein, Animas mine, Chocaya Province, Department of Potosi, Sur Chichas, Bolivia.

Name: The prefix *clino* emphasizes the monoclinic symmetry and the base name the structural and chemical similarity to orthorhombic *oscar Kempffite*.

Type Material: Natural History Museum, Vienna, Austria (O 276).

References: (1) Makovicky, E., D. Topa, and W.H. Paar (2018) The definition and crystal structure of clino-oscar Kempffite, Ag₁₅Pb₆Sb₂₁Bi₁₈S₇₂. *Eur. J. Mineral.*, 30(3), 569-579. (2) (2020) *Amer. Mineral.*, 105(7), 1111-1112 (abs. ref. 1).