Stibiogoldfieldite $Cu_{12}(Sb_2Te_2)S_{13}$

Crystal Data: Cubic. *Point Group*: $\bar{4}\,3m$. As anhedral grains, to 0.6 mm.

Physical Properties: *Cleavage*: Indistinct. *Tenacity*: Brittle. *Fracture*: Conchoidal.
Hardness = [3.5-4] (by analogy within the group). D(meas.) = n.d. D(calc.) = 5.055

Optical Properties: Opaque. *Color*: Dark gray, gray with brownish tints in reflected light.
Streak: Gray. *Luster*: Metallic.
Optical Class: Isotropic.
R: (470) 31.1, (546) 30.9, (589) 30.8, (650) 31.0

Cell Data: *Space Group: I*$\bar{4}\,3m$. a = 10.347(2) Z = 2

X-Ray Diffraction Pattern: Mohawk mine, Goldfield district, Esmeralda Co., Nevada, USA.
2.974 (100), 1.821 (32), 3.644 (19), 2.576 (19), 1.553 (13), 2.020 (10), 2.754 (8)

Chemistry:

	(1)	(2)	(3)
Cu	45.03	43.84	45.44
Ag	0.26	0.21	
Fe	0.02		
Zn	0.13		
Sn	0.02		
Pb	0.05		
As	2.80	2.63	
Sb	8.02	5.92	14.51
Bi	2.77	0.70	
Te	15.15	20.07	15.21
Se	0.52	0.97	
S	24.50	25.13	24.84
Total	99.27	99.47	100.00

(1) Mohawk mine, Goldfield mining district, Esmeralda Co., Nevada, USA; average electron microprobe analysis; corresponding to $^{M(2)M(1)}(Cu_{12.05}Ag_{0.04}Zn_{0.03}Fe_{0.01})_{\Sigma=12.13}\,^{X(3)}(Sb_{1.12}As_{0.63}Bi_{0.23}Te_{2.02})_{\Sigma=4.00}(S_{12.99}Se_{0.11})_{\Sigma=13.10}$. (2) Do., corresponds to $(Cu_{11.30}Ag_{0.03})_{\Sigma=11.33}(Sb_{0.80}As_{0.57}Bi_{0.06}Te_{2.57})_{\Sigma=4.00}(S_{12.83}Se_{0.20})_{\Sigma=13.03}$. (3) $Cu_{12}(Sb_2Te_2)S_{13}$.

Mineral Group: Tetrahedrite group. $^{M(2)}A_6{}^{M(1)}(B_4C_2)^{X(3)}D_4{}^{S(1)}Y_{12}{}^{S(2)}Z$

Occurrence: Formed by late-stage Te-bearing hydrothermal fluids in epithermal precious metal deposits hosted in altered volcanic rocks.

Association: Quartz, pyrite, a Ag-Bi-(S,Se) phase (holotype); quartz, pyrite, calaverite, bismuthinite, bohdanowiczite, a Ag-Bi-(S,Se) phase (cotype).

Distribution: From the Mohawk mine, Goldfield mining district, Esmeralda Co., Nevada, USA.

Name: Prefix, *stibio*, identifies the analog of *goldfieldite* with Sb > (As, Bi) in the D site.

Type Material: Natural History Museum, University of Pisa, Italy (19926) and the Department of Mineralogy and Petrology, National Museum, Prague, Czech Republic (P1P 78/2020 part of holotype and P1P 80/2020 cotype).

References: (1) Biagioni, C., J. Sejkora, S. Musetti, E. Makovicky, R. Pagano, M. Pasero, and Z. Dolníček (2022) Stibiogoldfieldite, $Cu_{12}(Sb_2Te_2)S_{13}$, a new tetrahedrite-group mineral. Mineral. Mag., 86, 168-175. (2) Biagioni, C., L.L. George, N.J. Cook, E. Makovicky, Y. Moëlo, M. Pasero, J. Sejkora, C.J. Stanley, W.D. Welch, and F. Bosi (2020) The tetrahedrite group: Nomenclature and classification. Amer. Mineral., 105, 109-122.