Ferrostalderite $CuFe_2TlAs_2S_6$

Crystal Data: Tetragonal. *Point Group*: $\bar{4}$ 2*m*. As equant to prismatic crystals to 50 μm displaying {110} and {101}.

Physical Properties: *Cleavage*: n.d. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.528

Optical Properties: Opaque. *Color*: Black, dark gray in reflected light. *Streak*: Black. *Luster*: Metallic.
Optical Class: *Anisotropism*: Weak, yellowish to bluish. Very weak internal reflections.
R_1-R_2: (471.1) 24.2-25.4, (548.3) 23.7-24.7, (586.6) 22.9-23.8, (652.3) 21.0-22.0

Cell Data: *Space Group*: $I\bar{4}$ 2*m*. *a* = 9.8786(5) *c* = 10.8489(8) Z = 4

X-ray Powder Pattern: Lengenbach quarry, Binn Valley, Wallis, Switzerland.
2.937 (100), 4.092 (70), 3.396 (35), 2.435 (33), 3.493 (23), 2.656 (19), 2.470 (19)

Chemistry:

	(1)
Cu	6.24
Ag	4.18
Fe	9.95
Zn	4.46
Hg	1.22
Tl	26.86
As	19.05
Sb	0.63
S	25.39
Total	97.98

(1) Lengenbach quarry, Binn Valley, Wallis, Switzerland; average electron microprobe analysis; corresponds to $Cu_{0.75}Ag_{0.30}Fe_{1.36}Zn_{0.52}Hg_{0.05}Tl_{1.00}[As_{1.94}Sb_{0.04}]_{\Sigma=1.98}S_{6.04}$.

Mineral Group: Routhierite isotypic series.

Occurrence: Formed as massive to interstitial sulfosalt accumulations in dolostone by late stage Tl-As-Cu-Fe-rich hydrothermal fluids during upper greenschist to lower amphibolite metamorphism.

Association: Dolomite, realgar, baumhauerite(?), pyrite.

Distribution: From the Lengenbach quarry, Binn Valley, Wallis, Switzerland.

Name: The prefix, *ferro*, indicates the iron isotype of *stalderite*.

Type Material: National History Museum, University of Florence, Italy (3148/I).

References: (1) Biagioni, C., L. Bindi, F. Nestola, R. Cannon, P. Roth, and T. Raber (2016) Ferrostalderite, $CuFe_2TlAs_2S_6$, a new mineral from Lengenbach, Switzerland: occurrence, crystal structure, and emphasis on the role of iron in sulfosalts. Mineral. Mag., 80, 175-186.