Pokhodyashinite $CuTlSb_2(Sb_{1-x}Tl_x)AsS_{7-x}$ (0.2<X<0.5)

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As anhedral grains to 0.1 mm.

Physical Properties: *Cleavage*: Poor on {100}. *Tenacity*: Brittle. *Fracture*: Uneven.
Hardness = 2 VHN = 50-61, 55 average (20 g load). D(meas.) = n.d. D(calc.) = 5.169

Optical Properties: Opaque. *Color*: Black, grayish white in reflected light. *Streak*: Black.
Luster: Metallic.
Optical Class: *Anisotropism*: Strong, dark brownish gray to light bluish gray.
Bireflectance: Distinct.
R_1-R_2: (470) 28.9-34.6, (546) 27.6-33.4, (589) 26.7-32.4, (650) 26.1-31.1

Cell Data: *Space Group: C*2/*m*. a = 23.431(5) b = 3.996(2) c = 14.070(3) β = 110.23(3)° Z = 4

X-Ray Diffraction Pattern: Calculated pattern.
2.996 (100), 2.748 (72), 3.671 (68), 3.466 (67), 3.834 (66), 2.846 (46), 3.474 (36)

Chemistry:

	(1)
Cu	4.59
Ag	3.79
Tl	27.88
Pb	0.42
As	7.63
Sb	32.95
S	21.89
Total	99.15

(1) Vorontsovskoe gold deposit, Sverdlovskaya Oblast', Northern Urals, Russia; average electron microprobe analysis; corresponds to $Cu_{0.700}Ag_{0.340}Tl_{1.320}Pb_{0.020}Sb_{2.630}As_{0.990}S_{6.625}$ or structural formula $^{Cu1}(Cu_{0.70}Ag_{0.30})^{Tl1}Tl_{1.00}{}^{Sb1}Sb_{1.00}{}^{Sb2}(Sb_{0.63}Tl_{0.33}Ag_{0.04})^{Sb3}Sb_{1.00}{}^{As4}(As_{0.99}Sb_{0.01})S_{6.63}$.

Occurrence: In mineralized carbonate breccia altered by the interaction between post-magmatic hydrothermal solutions and carbonate rocks.

Association: Orpiment, pyrite, realgar, baryte, clinochlore, As-bearing fluorapatite, harmotome, prehnite, native gold, a rich spectrum of sulfosalts, calcite.

Distribution: From the Vorontsovskoe gold deposit, ~13 km south of Krasnotur'insk, Sverdlovskaya Oblast', Northern Urals, Russia.

Name: Honors Maxim Mikhailovitch *Pokhodyashin* (1708-1780), a pioneer of mining engineering and smelting works in the Northern Urals.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (5517/1).

References: (1) Kasatkin, A.V., J. Plášil, E. Makovicky, R. Škoda, A.A. Agakhanov, and M.V. Tsyganko (2022) Pokhodyashinite, $CuTlSb_2(Sb_{1-x}Tl_x)AsS_{7-x}$, a new thallium sulfosalt from the Vorontsovskoe gold deposit, Northern Urals, Russia. J. Geosciences, 67(1), 41-51.