Maletoyvayamite $Au_3Se_4Te_6$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As anhedral grains to 50 μm.

Physical Properties: Cleavage: Good on {010} and {001}. *Tenacity*: Brittle. *Fracture*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 7.98

Optical Properties: Opaque. *Color*: Gray in reflected light. *Streak*: Gray [synthetic].
Luster: Metallic.
Optical Class: Strongly anisotropic. *Bireflectance*: Strong, gray to bluish gray.
R_1-R_2: (470) 38.9-39.1, (546) 39.3-39.5, (589) 39.3-39.6, (650) 39.4-39.7

Cell Data: *Space Group*: $P\bar{1}$. a = 8.901(2) b = 9.045(1) c = 9.265(4) α = 97.66(3)° β = 106.70(2)° γ = 101.40(1)° Z = 2

X-ray Powder Pattern: Gaching occurrence, Maletoyvayam ore field, Far East Region, Russia.
2.911 (100), 8.650 (25), 1.930 (8), 1.901 (8), 2.223 (7), 2.180 (6), 1.725 (6)

Chemistry:

	(1)	(2)
Au	34.46	35.34
Se	16.76	18.88
Te	47.23	45.78
S	0.84	.
Total	99.29	100.00

(1) Gaching occurrence, Maletoyvayam ore field, Far East Region, Russia; average electron microprobe and Raman spectroscopic analyses; corresponds to $Au_{2.90}(Se_{3.52}S_{0.44})_{\Sigma=3.96}Te_{6.14}$.
(2) $Au_3Se_4Te_6$.

Occurrence: In heavy-mineral concentrate from a hydrothermal, high-sulfidation epithermal deposit.

Association: Native gold, [(Au-Ag)-(Sb,As,Te,S)-O], calaverite, unnamed phases (AuSe, Au_2TeSe, and Au oxide), native tellurium, tennantite-tetrahedrite, goldfieldite, watanabeite, senarmontite, tripuhyite, rooseveltite, tiemannite, antimonselite, guanajuatite.

Distribution: From the Gaching occurrence, Maletoyvayam ore field, southwestern Koryak Highland, central Kamchatka volcanic belt, Far East Region, Russia.

Name: For the type locality, the *Maletoyvayam* deposit in the Kamchatka peninsula, Russia.

Type Material: Central Siberian Geological Museum, V.S. Sobolev Institute of Geology and Mineralogy, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia (V-9/1).

References: (1) Tolstykh, N.D., M. Tuhý, A. Vymazalová, J. Plášil, F. Laufek, A.V. Kasatkin, F. Nestola, and O.V. Bobrova (2020) Maletoyvayamite, $Au_3Se_4Te_6$, a new mineral from Maletoyvayam deposit, Kamchatka peninsula, Russia. Mineral. Mag., 84, 117-123.