Polkanovite $Rh_{12}As_7$

Crystal Data: Hexagonal. *Point Group*: 6/*m*. As irregular inclusions to 0.140 mm intergrown with isoferroplatinum and tulameenite, in grains of native ruthenium.

Physical Properties: *Cleavage*: None. *Tenacity*: n.d. *Fracture*: n.d. Hardness = n.d. VHN = 399-422, 410 average (40 g load). D(meas.) = n.d. D(calc.) = 10.20

Optical Properties: Opaque. *Color*: Brownish gray in reflected light. *Streak*: n.d. *Luster*: Metallic.
Optical Class: *Anisotropism*: Weak, gray to brownish gray.
R_1-R_2: (460) 47.5-43.9, (540) 48.3-44.7, (580) 49.2-46.4, (660) 51.3-48.6

Cell Data: *Space Group*: $P6_3/m$. a = 9.31(2) c = 3.64(2) Z = 1

X-ray Powder Pattern: Miass River sediment, near Zlatoust, South Urals, Russia.
1.755 (100), 1.852 (90), 1.549 (80), 1.767 (60), 2.33 (40), 2.03 (20), 1.818 (20)

Chemistry:

	(1)
Ru	2.9
Rh	54.3
Pd	2.0
Os	0.7
Ir	0.7
Pt	0.4
Ni	7.0
As	31.7
Total	99.7

(1) Miass River sediment, near Zlatoust, South Urals, Russia; average electron microprobe analysis; corresponding to $(Rh_{8.90}Ni_{2.01}Ru_{0.48}Pd_{0.32}Os_{0.06}Ir_{0.06}Pt_{0.03})_{\Sigma=11.86}As_{7.13}$.

Occurrence: In the 0.05-1.5 mm fraction of gold-PGM-placer heavy-mineral concentrate in a river draining chromite-mineralized ophiolitic complexes (Russia). Detrital (South Africa).

Association: Isoferroplatinum, tulameenite, native ruthenium, cherepanovite, irarsite, palladodymite, sperrylite, miassite (Russia).

Distribution: In placer deposits, upper Miass river, near Zlatoust, South Urals, Russia and the Evander Goldfield, Witwatersrand Basin, South Africa.

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Type Material: Mining Museum, Saint Petersburg Mining Institute, Russia (3073/1).

References: (1) Britvin, S.N., N.S. Rudashevsky, A.N. Bogdanova, and D.K. Shcherbachov (1998) Polkanovite $Rh_{12}As_7$ - a new mineral from a placer at the Miass River (South Urals). Zapiski Vseross. Mineral. Obshch., 127(2), 60-62 (in Russian, English abs.). (2) (1999) Amer. Mineral., 84, 195 (abs. ref. 1). (3) Malitch, K.N. and R.K.W. Merkle (2004) Ru-Os-Ir-Pt and Pt-Fe alloys from the Evander Goldfield, Witwatersrand Basin, South Africa: detrital origin inferred from compositional and osmium-isotope data. Can. Mineral., 42, 631-650.