PALLADODIMITE (Pd, Rh)_2As — НОВЫЙ МИНЕРАЛ ИЗ РОССЫПИ РЕКИ МИАСС (УРАЛ)

S. N. BRITVIN, N. S. RUDASHEVSKY, A. N. BOGDANOVA, D. K. SHCHERBACHOV. PALLADODYMITE (Pd, Rh)_2As, A NEW MINERAL FROM A PLACIER OF THE MIASS RIVER, THE URALS

Palladodymite has been found in a small unnamed placer deposit in the upper Miass river, South Ural, Russia. It forms inclusions up to 30 x 70 μm in native ruthenium. Associated minerals are isoferroplaiinum, cherepanovite, rhodian irarsite, hongshiite, sperrylite, tulameenite, unnamed IrAsTe. In reflected light palladodymite is brownish-gray with bluish tint. Distinctly anisotropic from bluish-gray to reddish-brown. R_{max}—R_{min} (A) in air (%): 50.5—45.5 (420), 50.6—45.4 (440), 50.7—45.5 (460), 51.6—45.8 (480), 52.6—46.5 (500), 53.3—46.9 (520), 54.0—46.8 (540), 54.8—46.9 (560), 56.2—48.0 (580), 57.6—48.5 (600), 57.8—48.9 (620), 58.2—49.5 (640), 59.1—50.2 (660), 59.7—50.6 (680), 60.6—50.8 (700). VHN (load 20 g) 546—611 kg/mm^2, mean 566 kg/mm^2. D (calc) 11.3 g/cm^3. Brittle. Cleavage and parting are none observed. Chemical composition (wt %), mean of 4 analyses: Ru 2.4, Rh 27.6, Pd 33.5, Os 1.0, Ir 1.7, Pt 4.4, Ni 3.0, As 26.5, total 100.1. Empirical formula based on 3 atoms per formula unit: (Pd_{0.90}Rh_{0.07}Ni_{0.15}Ru_{0.07}Pt_{0.00}Ir_{0.00}Os_{0.02})_{2.00}As_{1.01} corresponding to (Pd,Rh)_2As. Orthorhombic, Pnma, a 5.91 (2), b 3.90 (1), c 7.34 (2) Å, V 169 Å³, Z = 4. Strongest lines of powder diffraction pattern [d(l) (hkl)]: 2.43 (10) (112), 2.24 (5) (211), 2.06 (1) (013), 1.838 (5) (004). It is named on the chemical composition, PALLADium and Greek διόσθυς (twin), as it is Pd-dominant analog of rhodarsenide. It is isostructural with rhodarsenide; polymorphous with palladoarsenide and palladobismutharsenide.