

Features of interaction of tetrabromopalladiumhydrogen acid with tetraorganylphosphonium bromides in various solvents. Synthesis and structure of palladium complex: $[\text{Ph}_3(\text{cyclo-C}_5\text{H}_9)\text{P}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$, $[\text{Ph}_3\text{BuP}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$, $[\text{Ph}_3\text{AmP}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$, $[\text{Ph}_3(\text{cyclo-C}_5\text{H}_9)\text{P}]^+[\text{PdBr}_3(\text{DMSO})]^-$, $[\text{Ph}_3\text{BuP}]^+[\text{PdBr}_3(\text{DMSO})]^-$ and $[\text{Ph}_3\text{AmP}]^+[\text{PdBr}_3(\text{DMSO})]^-$.

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Abstract

The reaction of tetrabromopalladiumhydrogen acid with tetraorganylphosphonium bromides in water followed by recrystallization from acetonitrile were obtained complexes $[\text{Ph}_3(\text{cyclo-C}_5\text{H}_9)\text{P}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$ (**I**), $[\text{Ph}_3\text{BuP}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$ (**II**) и $[\text{Ph}_3\text{AmP}]^+_2[\text{Pd}_2\text{Br}_6]^{2-}$ (**III**). Recrystallization complexes **I-III** from DMSO leads to the formation of complexes $[\text{Ph}_3(\text{cyclo-C}_5\text{H}_9)\text{P}]^+[\text{PdBr}_3(\text{DMSO})]^-$ (**IV**) $[\text{Ph}_3\text{BuP}]^+[\text{PdBr}_3(\text{DMSO})]^-$ (**V**) и $[\text{Ph}_3\text{AmP}]^+[\text{PdBr}_3(\text{DMSO})]^-$ (**VI**). According to X-ray data, the crystals **I**, **II** consist of tetrahedral cations tetraorganylphosphonium (P-C 1.787(3)-1.811(3) Å, CPC 106.51(14)°-110.71(16)° for **I** и P-C 1.792(5)-1.802(4) Å, CPC 107.6(2)°-111.6(2)° for **II**) and planar centrosymmetric binuclear anions $[\text{Pd}_2\text{Br}_6]^{2-}$ (Pd-Br_b 2.4570(5) Å, Pd-Br_t 2.4014(5), 2.4099(5) Å for **I** и (Pd-Br_b 2.4385(6), 2.4388(5) Å, Pd-Br_t 2.4063(6), 2.4089(5) Å for **II**). The crystals **IV-VI** consist of tetrahedral cations tetraorganylphosphonium (**IV** P-C 1.789(3)-1.811(4) Å, CPC 105.85(16)°-111.31(11)°; **V** P-C 1.793(3)-1.806(3) Å, CPC 108.42(14)° 110.21(13)°; **VI** P-C 1.781(3)-1.795(3) Å, CPC 108.23(17)°-110.54(17)°) and the square anions $[\text{PdBr}_3(\text{DMSO})]^-$, in which dimethylsulfoxide ligand coordinated to the palladium atom through a sulfur atom (Pd-S 2.257 (1) Å).