

Synthesis and some properties of Pd nanoparticles stabilized with 5-R-tetrazoles

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Spherical, nearly monodispersed palladium nanoparticles (NPs), stabilized by 5-phenyl- (5-Ph-), 5-benzyl- (5-Bn-) and 5-octyltetrazole or by these ligands together with quaternary ammonium salt as a second ligand have been obtained by reduction of H_2PdCl_4 in two-phase water-toluene system (Fig. 1). In all cases metal nanoparticles about 5 nm in diameter were localized on water-toluene interface. The synthesized palladium particles were characterized by TEM, UV-vis and FTIR spectroscopy. It was observed that NPs stability and ability to re-dispersion were determined by the ligand, e. g. Pd-NPs capped with 5-Ph- and 5-Bn-tetrazole were re-dispersed in DMSO medium (Fig. 2). Pd-NPs synthesized with 5-R-tetrazoles were found to have no antifungal and antimicrobial activity against bacterial strains but could be used as catalysts.

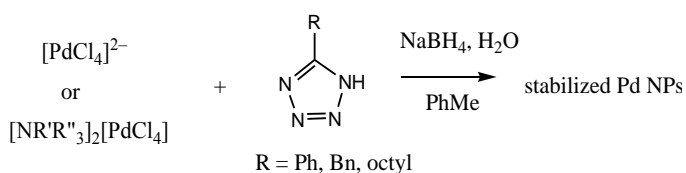


Figure1. Scheme of reaction

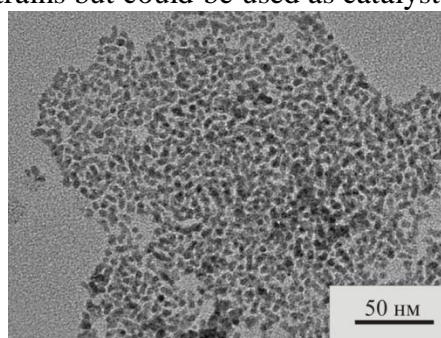


Figure 2. Pd NPs, capped with 5-Ph-tetrazole