One-pot synthesis PdAu bimetallic composite nanoparticles and their catalytic activities for hydrogen peroxide generationl

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In this study, we first synthesized the PdAu core-shell/shell/ shell structure bimetallic with a series of Au/Pd mole ratio by one-top process in aqueous phase. The Au and Pd precursor were conducted by co-reduction using ascorbic acid in the represence of polyallylamine hydrochloride (PAH). The PdAu bimetallic nanoparticles had the sphere shape and fine structure like onion. By the transmission electron microscope (TEM) and high-angle annular dark field scanning transmission electron microscopy (HAADF-STEM) and energy-dispersive X-ray spectrometry (EDS) analyses characterization, it indicated that the prepared nanoparticles had onion like core/shell/shell/shell structure with a Au-rich core, a Pd-rich shell, a Au-rich shell, and Pd shell, respectively. Specially, the novel structure PdAu bimetallic were explored the catalytic performance toward the hydrogen peroxide generation reaction.