CONSTRUCTION OF HETEROGEOUS CATALYSTS AND DYNAMIC INTERFACES ON A POLYDOPAMINE PLATFORM

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Polydopamine has attracted major attention in the past decade due to its universal adhesive property, its redox activity, and its biocompatibility. [1] In our work, we prepared polydopamine supported palladium nanoparticles (Pd/PDA) and magnetically separable Pd/PDA modified Fe\textsubscript{3}O\textsubscript{4} nanoparticles (Fe\textsubscript{3}O\textsubscript{4}@Pd/PDA) with an outstanding Pd nanoparticle diameter of 1-3 nm and 5-8 nm respectively. These catalysts demonstrated high activity and selectivity in transfer hydrogenation reactions [2], Suzuki cross-couplings and tandem Suzuki/transfer hydrogenation reactions. [3] Furthermore, gold nanoparticle deposited polydopamine modified quartz slides (Q-PDA-Au) were prepared as an easy-to-assemble system for the immobilization of thiol and amine terminated azobenzene photoswitches. These azobenzenes were able to reversibly isomerize on the Q-PDA-Au surface upon UV-light irradiation. Moreover, amine terminated azobenzenes could be exchanged by thiolated ones, thus, a reconfigurable surface could be constructed.

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