

Synthesis of Pt-decorated Magnetic Nanozyme for Sensitive Point-of-Care Bioassay

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The increasing needs for accurate and sensitive bioassays has accelerated development of various point-of-care applications. To fulfill the such demands, Fe₃O₄-Pt/core-shell nanoparticle (MPt/CS NPs) were synthesized and used as nanozyme for bioassay. Fe₃O₄ was widely studied for its own catalytic activity superior to that of natural enzyme and its own magnetic property. Incorporating Pt to the outer layer of Fe₃O₄ improve the catalytic activity while constructing the heterogeneous nanostructures. The synthesized MPt/CS NPs were applied into Lateral flow immunoassay (LFIA) strips which is the one of the widely used point-of-care bioassay devices. The improved catalytic activity and the magnetic property of MPt/CS NPs increased the sensitivity more than 100 times of LFIA compared to the sensitivity of conventional LFIA based on Au nanoparticles.