

Sensitive multiplexed Immunoassay using SiO₂@AuNP with MEF effect in shape-coded hydrogel

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Metal-Enhanced Fluorescence(MEF) has been widely studied to improve the sensitivity of protein based bioassays. MEF is a well-known technology, wherein at the certain distance between metallic nanoparticle and fluorophores result in fluorescence enhancement. Silica coated Gold nanoparticle is the most promising candidate for the fluorescence biosensing owing to their low toxicity and high enhanced-fluorescence intensity. Furthermore, hydrogel is a soft and elastic 3D polymeric structured material which absorbs water to provide biological environment. In our group, AuNps were coated with the various thickness of silica to optimize the MEF effect. We also prepared different shapes of PEG hydrogel microparticles capable of multiplexed suspension immunoassays. After immobilizing IgG on the surface of the maximum MEF effected SiO₂@AuNPs, entrapped in the different shape of hydrogel microparticles. It is expected to utilize for high sensitive multiplexed immunoassay detecting various analytes.