

Response to Article “Ultrasensitive Hierarchical AuNRs@SiO₂@Ag SERS Probes for Enrichment and Detection of Insulin and C-Peptide in Serum” [Response to Letter]

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Dear Editor

Thank for your concern and comments to our work “Ultrasensitive Hierarchical AuNRs@SiO₂@Ag SERS Probes for Enrichment and Detection of Insulin and C-Peptide in Serum.” In this research we developed a nanomaterial-mediated sandwich SERS biosensor for the simultaneous detection of insulin and C-peptide. Gold nanorods@Raman tags@SiO₂@Ag nanocomposite was prepared by a series of surface functionalization through chemical reaction. We also displayed the drawback of the proposed strategy in reproducibility and aggregation of nanomaterials, in addition a potential possibility of nonspecific target binding.

Herein, amine-modified nanorods@Ramantags@SiO₂@Ag was added with AgNO₃ to form the SERS complex (Au@Ramantags@SiO₂@Ag). The purpose of the introduction of (3-aminopropyl)triethoxysilane is not to attach antibody. It was used as a chemical-linker to reduce in-situ AgNO₃ into Ag nanoparticles on the surface of gold nanorods@Ramantags@SiO₂ by amine in (3-aminopropyl)triethoxysilane due to the reduction feature because the uniform Au@Ramantags@SiO₂@Ag cannot be prepared without (3-Aminopropyl)triethoxysilane.¹⁻³ When Ag⁺ was reduced into Ag nanoparticles on the sites of amine, the amine will be covered and blocked due to the presence of Ag nanoparticles.¹⁻³ Therefore, BSA was adopted in this work. Of course, polyethylene glycol-based polymers are another alternative blocks that can effectively cover the excess surfaces on the SERS complex in order to reduce the biofouling, improve the nanoparticle stability, and enhance the efficacy on detecting glucose and C-peptide. We will pay attention to the based polymers blocks in our further work, which will be able to overcome many of the BSA's drawbacks. Thank for your kindly comments and advisement again.

Disclosure

The authors report no conflicts of interest in this communication.

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