Phenolic acids induced growth of 3D ordered gold nanoshell composite array as sensitive SERS nanosensor for antioxidant capacity assay

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Phenolic acids induced growth of 3D ordered gold nanoshell composite array as sensitive SERS nanosensor for antioxidant capacity assay

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Abstract

A novel method based on surface-enhanced Raman scattering (SERS) was developed to estimate the reducing capacity of phenolic acids by using self-assembled three-dimensionally (3D) ordered gold nanoparticles (GNPs) precursor composite (SiO_2/GNPs) arrays as nanoprobes. In the present work, the 3D ordered SiO_2/GNPs arrays immersed in the growth solution containing different phenolic acids, the SiO_2/GNPs were enlarged to varying degrees. Phenolic acids with one or more phenolic hydroxyl groups served as reductants for the growth of GNPs.