

Fabrication of 3D-hybrid (TNT/Au) Nanoarrays As Substrate for Surface-Enhanced Raman Scattering Detection

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Surface-enhanced Raman scattering (SERS) substrates have been achieved via simultaneous assembled gold nanoparticles (AuNPs) onto the titanium dioxide nanotube (TNT) template. The highly ordered TNT template based on the sputtered Ti thin film was anodized at 60 V 25 °C in ethylene glycol mixed with 0.3 wt% of ammonium fluoride diluted by 2 vol% H₂O. The effect of H₄AuCl₄ concentration among 0.1 to 1 mM on the Au particle size was investigated by mean characterization method as field-emission scanning electron microscope (FE-SEM). According to FE-SEM photograph, it clearly observes that the Au particle size gradually increases as the H₄AuCl₄ concentration was increased. Finally, in order to examine the SERS activity the methylene blue (MB) was performed as the probe molecules. The Au particle plays the important role on the SERS performance.

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