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4-Mercaptobenzoic Acid Labeled Gold-Silver-alloy-embedded Silica Nanoparticles as an Internal Standard Containing Nanostructures for Sensitive Quantitative Thiram Detection

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Supplementary materials:

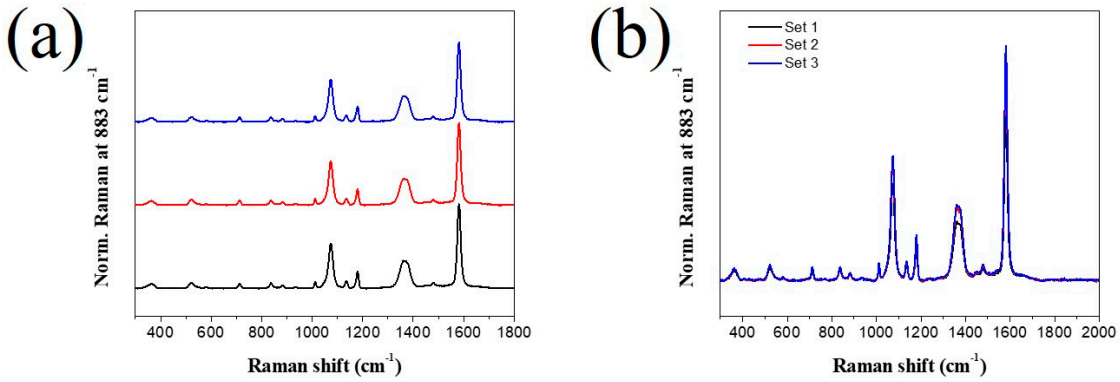

Figure S1. (**a**) Reproducibility and (**b**) repeatability of SERS signal of SiO2@Au@4-MBA@Ag NPs.

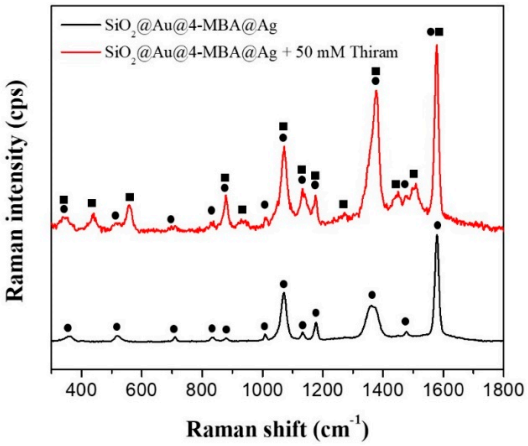

Figure S2. SERS spectra of SiO_2@Au@4-MBA@Ag nanoparticles in the presence and absence of 50-uM thiram.

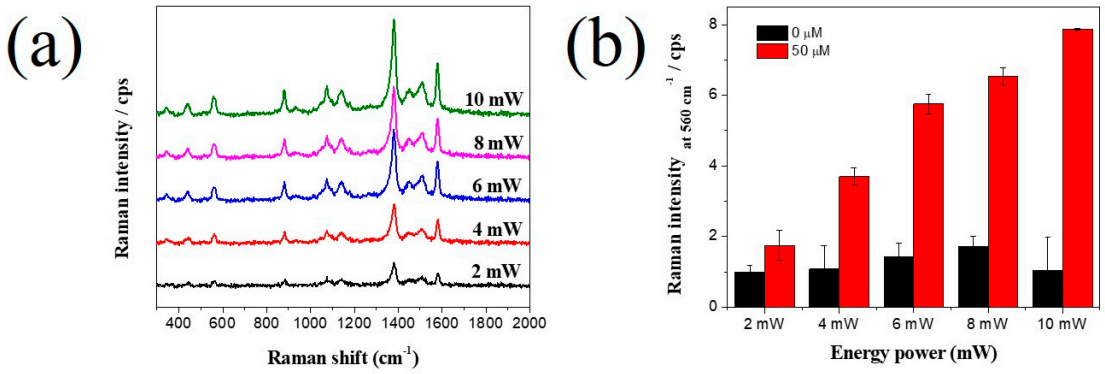

Figure S3. Effect of employed power energy on SERS signals of thiram detection: (**a**) SERS spectra and (**b**) SERS signal plot of SiO_2@Au@4-MBA@Ag nanoparticles in the presence of 50-uM thiram at employed power energy in the range of 2–10 mW.

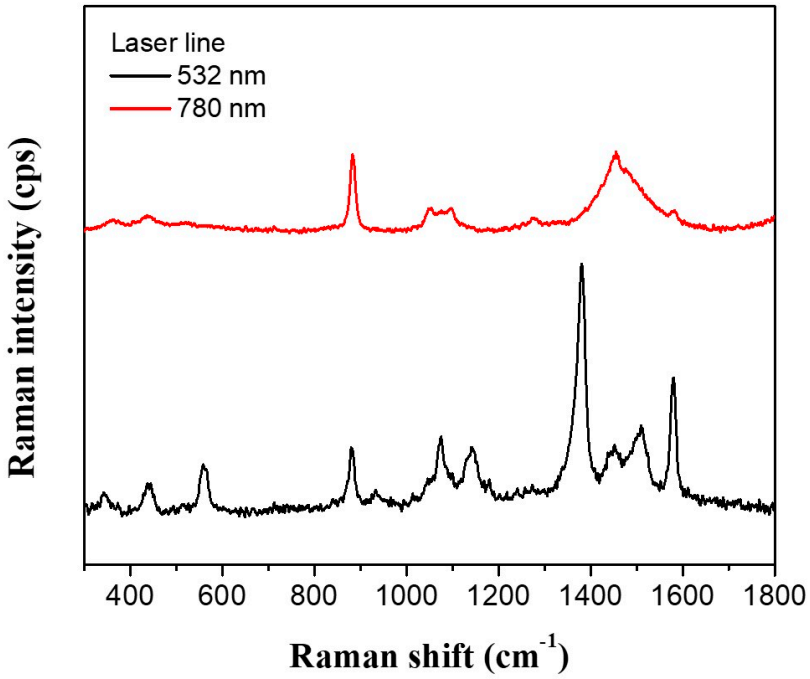

Figure S4. Effect of laser lines on SERS signals of thiram detection by SiO_2@Au@4-MBA@Ag nanoparticles in the presence of 50uM thiram at 10 mW.