Supporting Information for

Multiplexed Imaging of Trace Residues in a Single Latent Fingerprint

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Supplementary Figures:

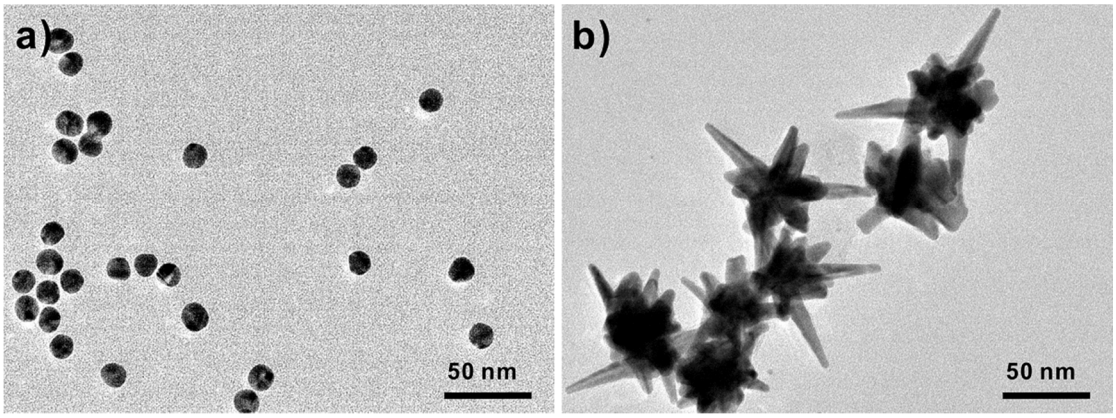

Figure S1. TEM images of a) 13 nm AuNPs and b) the synthesized AuNSs by a seed-growth method.

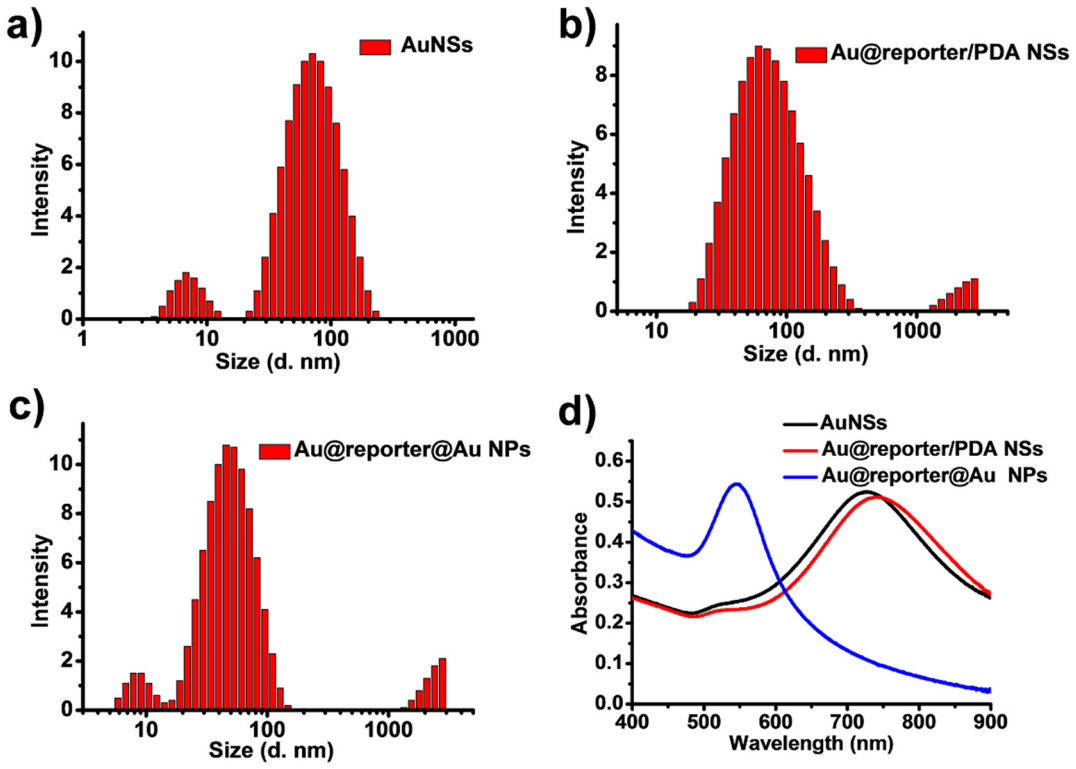

Figure S2. The hydrodynamic diameters of a) AuNSs, b) Au@reporter/PDA NSs, and c) Au@reporter@Au NPs measured with dynamic light scattering (DLS). d) UV-vis absorption spectra of AuNSs, Au@reporter/PDA NSs, and Au@reporter@Au NPs.

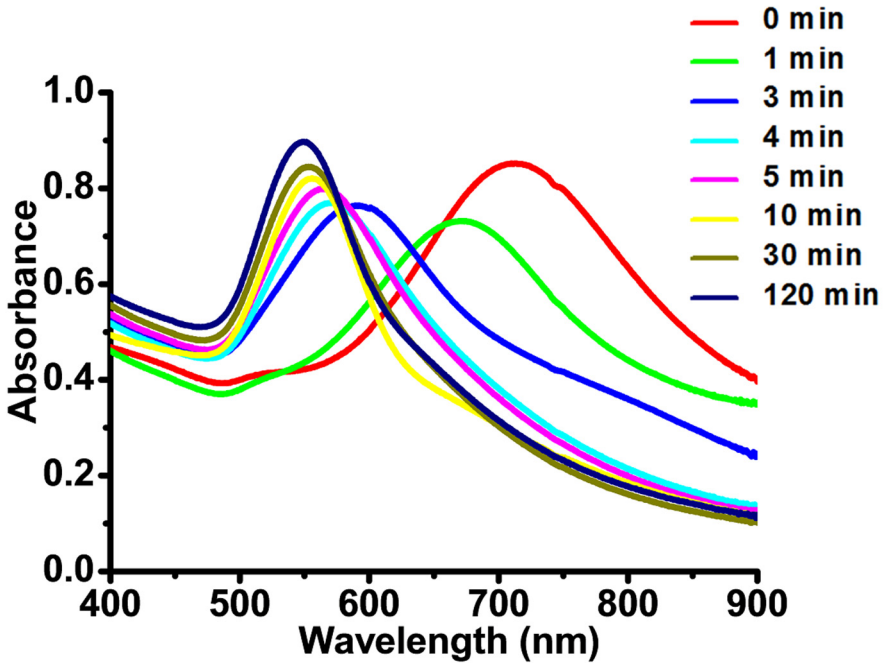

Figure S3. The UV-vis absorption spectra of Au@MBN/PDA NSs and the synthesized Au@MBN@Au NPs after adding 150 μM $HAuCl_4$ for various growth time: 0, 1, 3, 4, 5, 10, 30, and 120 min. The Au growth was stopped at desired time by adding 1.5 mM MPA.

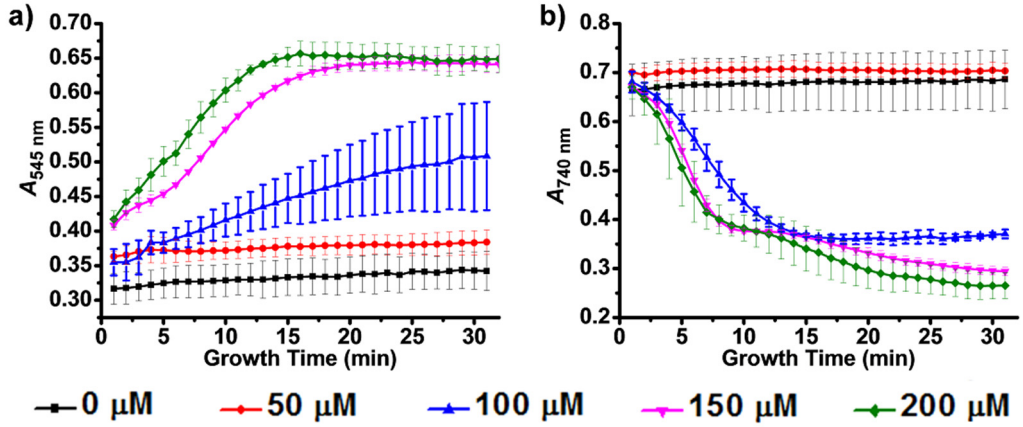

Figure S4. Kinetics of synthesizing Au@reporter@Au NPs by adding different concentrations of $HAuCl_4$ into the Au@reporter/PDA NSs solution. The Au growth process was monitored by collecting the absorbance at a) 545 nm and b) 740 nm simultaneously on a microplate reader.

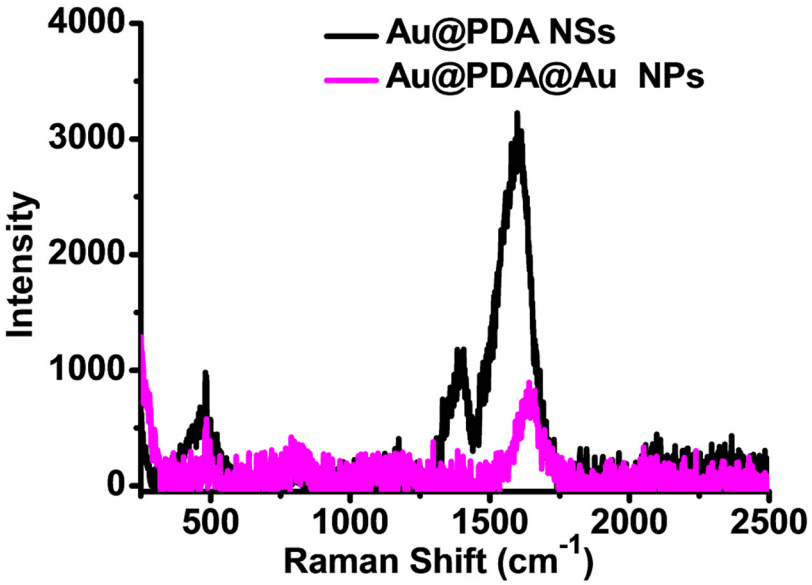

Figure S5. Raman spectra of Au@PDA NSs and that incubated with 100 μM of $HAuCl_4$. The remarkable decrease of PDA Raman peaks indicates the detachment of PDA in the process of Au growth.

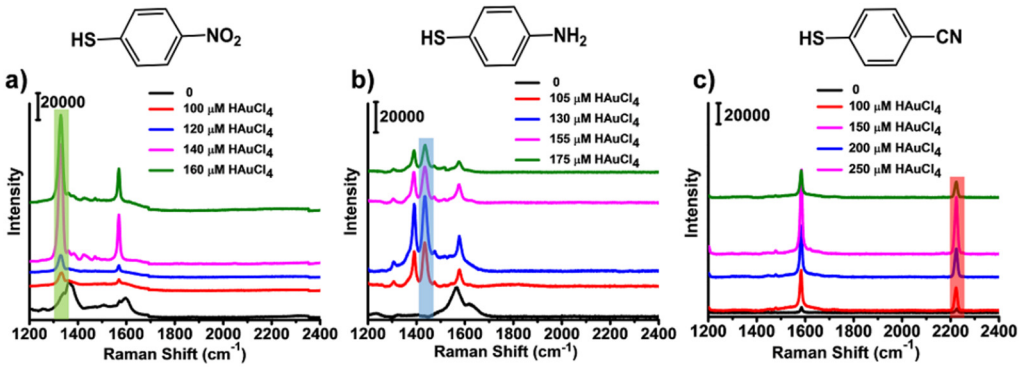

Figure S6. Raman spectra of the Raman reporter-embedded AuNPs with addition of different concentrations of $HAuCl_4$. a), b), and c) show the three different reporters: MBN, NTP, and ATP, respectively.

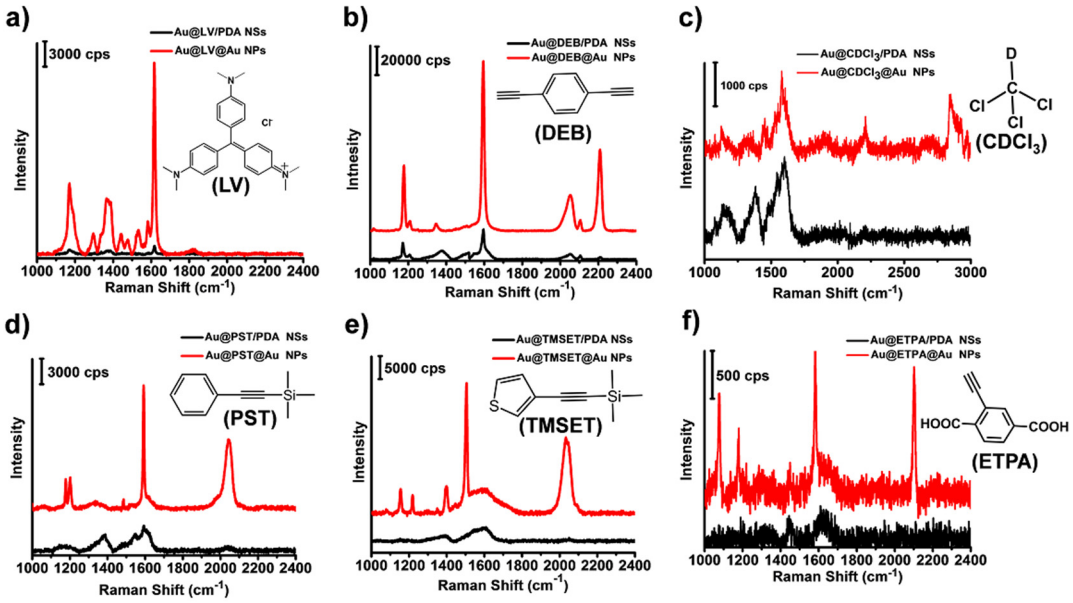

Figure S7. Raman spectra of Au@reporter/PDA NSs and the grown Au@reporter@Au NPs. The Raman reporters can be embedded into the as-obtained AuNPs without considering their chemical structures, indicating the versatility of the approach.

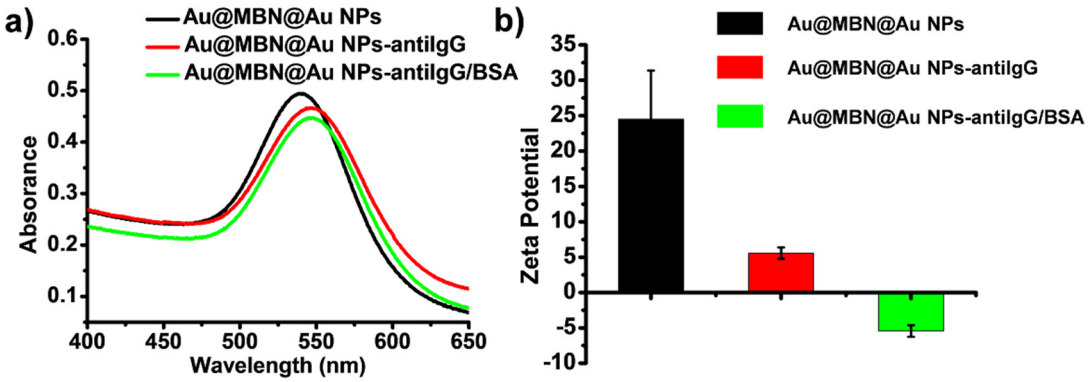

Figure S8. a) The UV-vis absorption spectra and b) the zeta potentials of the Au@MBN@Au NPs (black) and those functionalized with antiIgG (red), followed by blocking with BSA (green).

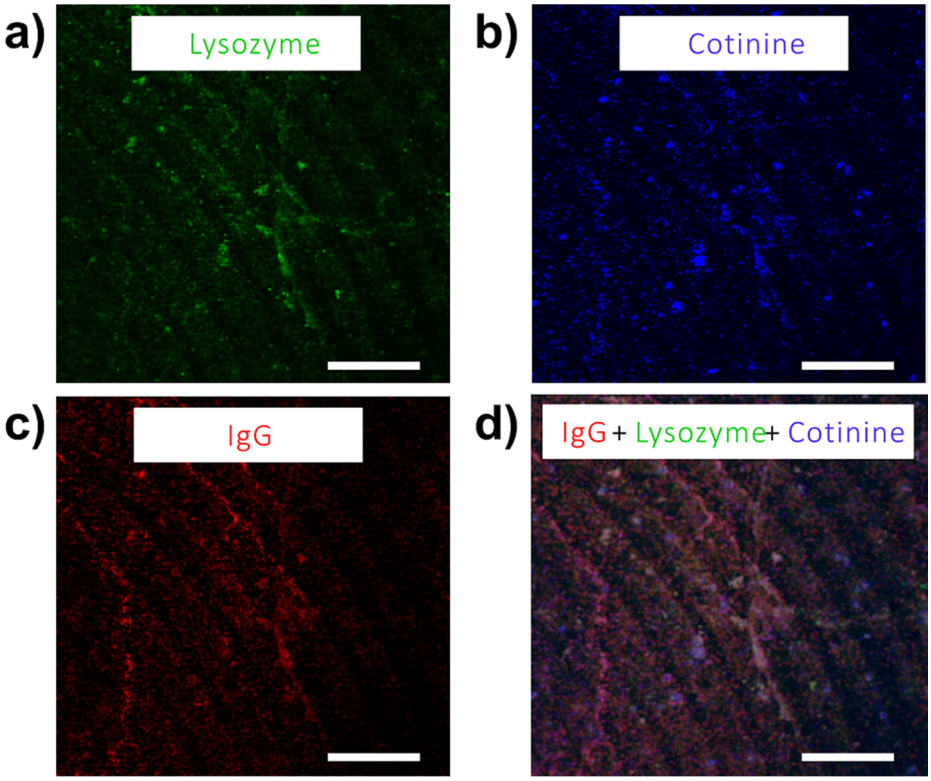

Figure S9. Multiplexed imaging of the fingerprint contaminated with 10^{-7} mg/mL of lysozyme (green), cotinine (blue), and IgG (red), and subsequently incubated with their specific SERS nanotags. Raman images of a) lysozyme, b) cotinine, c) IgG, and d) their merged image, respectively. Scale bar, 500 μm.