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Electronic Supplementary Information

Nano- and Microstructured Gold tubes for Surface-Enhanced Raman Scattering by Vapor-Induced Strain of Thin Films**

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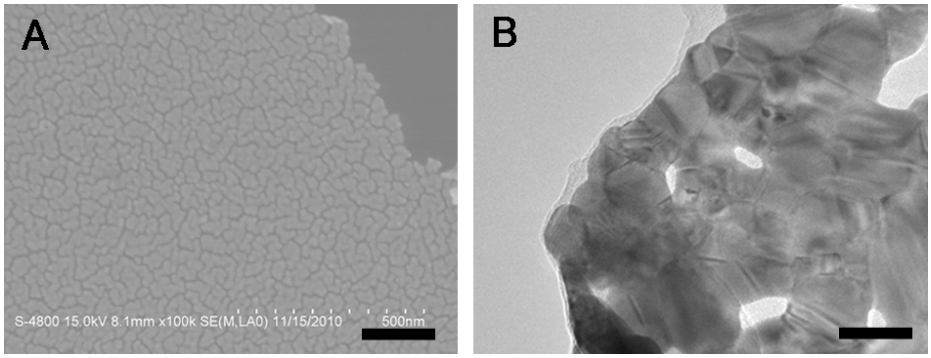

Figure S1. SEM (A) and TEM (B) images of gold film by electron beam evaporation. The gold film was composed of gold nanoclusters with average diameters of ~ 25 nm. Scale bars: (A) 200 nm; (B) 10 nm.

Method.

Method of measuring Se film thickness. The film thickness of Se was measured by the step srofiler (XP-2 Ambios Technology). In the process of making gold tube, Se film formation was a dynamic process, which was not suitable for measuring the Se film thickness. So we have designed this experiment to estimate the thickness of Se film. Se powder was put at the center of the furnace where the temperature was controlled at ~150-250 ^{o}C. The silicon substrates coated with 15 nm gold film were located at the downstream of the furnace center (at 100 ^{o}C region). The furnace was subsequently heated to 150-250 ^{o}C in 6 min, and then the furnace cooled naturally to the room temperature. High-purity argon was still kept at a constant flowing of 20 sccm and a pressure of ~30 Pa overall the preparation process. We measured the thickness of both Se and Au film by the step srofiler, then subtracted the thickness of Au film (15 nm), and obtained the thickness of Se film (Table S1).

Table S1. Total thickness of Se and Au film (nm) and thickness of Se film (nm).

Evaporation temperature (^{o}C)	Total thickness of Se and Au film (nm)	Thickness of Se film (nm)
150	45±3.15	30±3.15
160	58±3.24	43±3.24
185	67±2.77	52±2.77
230	89±2.43	74±2.43

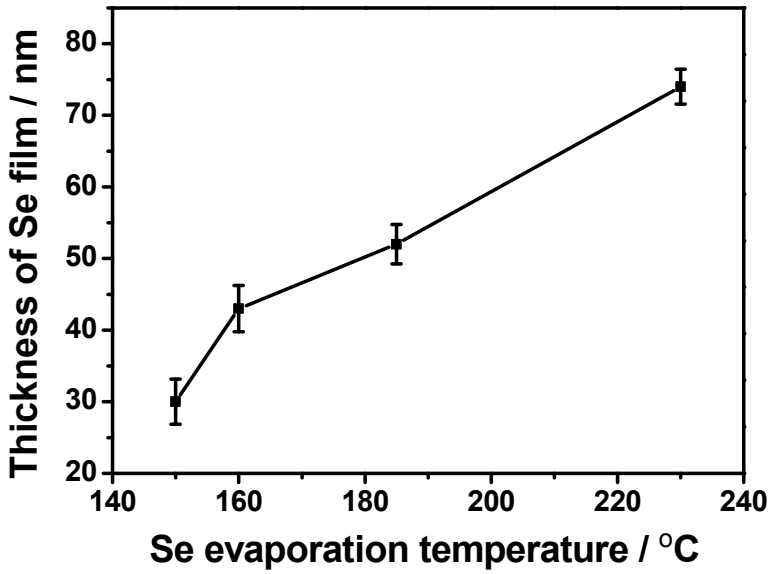

Figure S2. The dependence of the Se film thickness on the evaporation temperature of Se powder.

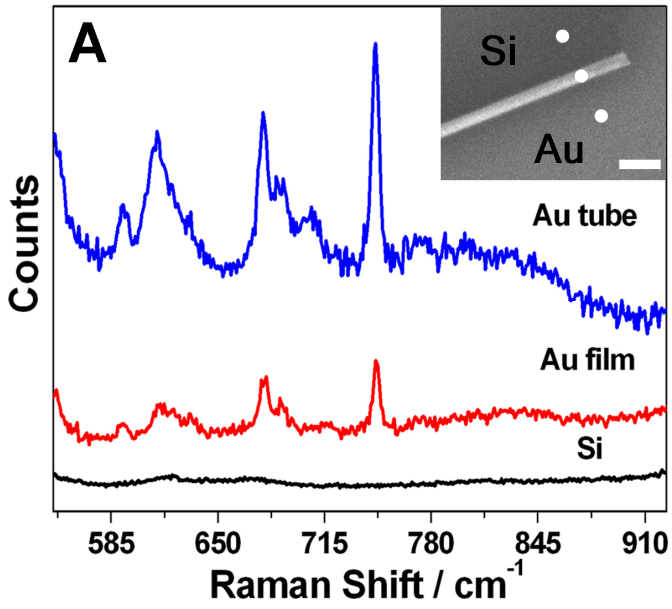

Figure S3. SERS spectra of 0.1 mM of adenine. Scale bar is 4 μm.