

## Supporting Information

### Shell-isolated nanoparticle-enhanced Raman spectroscopy study of the adsorption behaviour of DNA bases on Au(111) electrode surfaces

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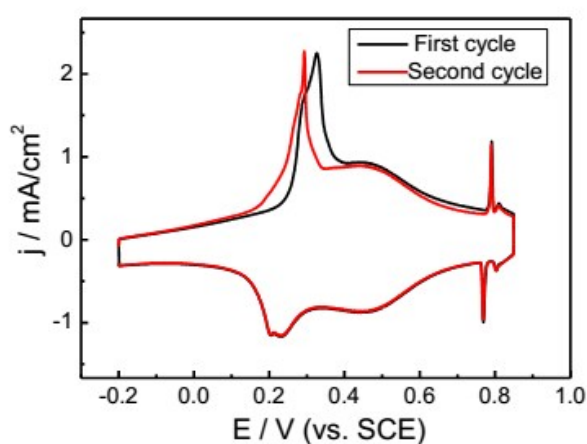


Figure S1. CVs from a Au(111) electrode in 0.1 M H<sub>2</sub>SO<sub>4</sub> solution, first cycle (black line) and second cycle (red line).

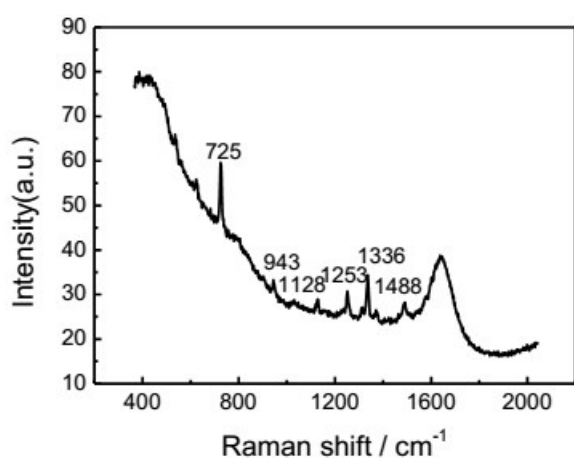


Figure S2. Normal Raman spectra of saturated adenine solution with 638nm laser.

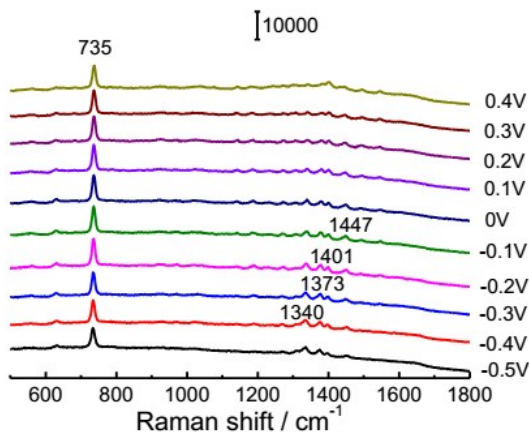


Figure S3. SHINER spectra of adenine adsorption on an Au(111) electrode in 0.1 M NaClO<sub>4</sub>+ 1 mM adenine. Expanded spectral range: 550 to 1800 cm<sup>-1</sup>.

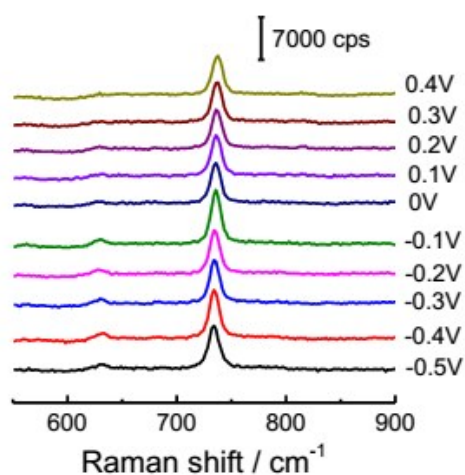


Figure S4. SHINER spectra of adenine on Au(111) electrode in 0.1 M NaClO<sub>4</sub> + 1 mM adenine applied potential reversible.

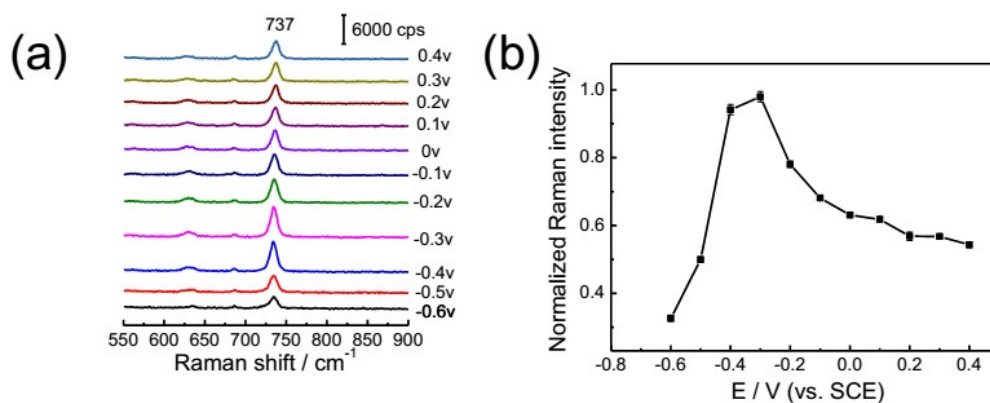


Figure S5. (a) SHINER spectra of adenine adsorption on a Au(111) electrode in 0.1 M NaClO<sub>4</sub> + 1 mM adenine at 785nm laser. (b) The dependence of normalized Raman intensity on applied potentials for the adenine ring breathing mode. Error bars represent standard deviations obtained by measuring at different locations on the samples.

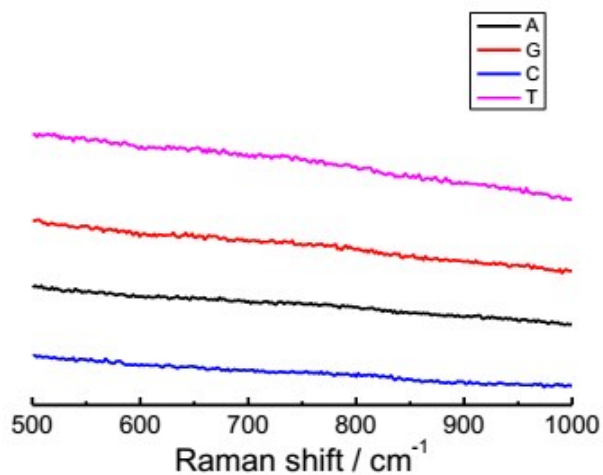


Figure S6. SHINER spectra of SHINERS NPs on silicon wafer in DNA nucleic acid solution.

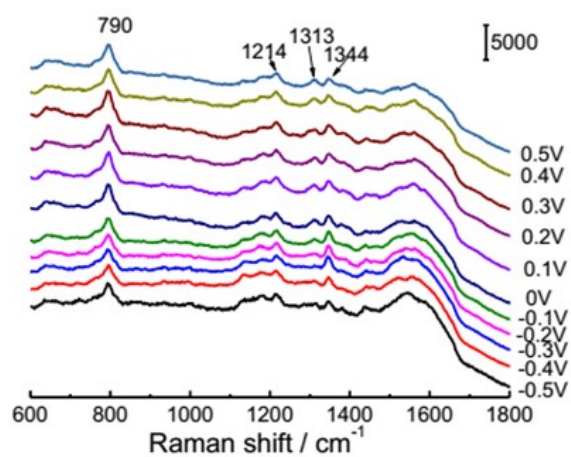


Figure S7. SHINER spectra of thymine adsorption on a Au(111) electrode in 0.1 M NaClO<sub>4</sub>+ 1 mM thymine. Expanded spectral range: 600 to 1800 cm<sup>-1</sup>.

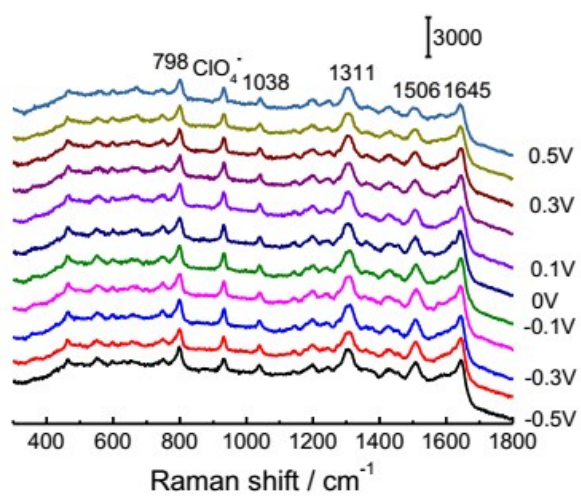


Figure S8. SHINER spectra of cytosine adsorption on a Au(111) electrode in 0.1 M NaClO<sub>4</sub>+ 1 mM cytosine. Expanded spectral range: 350 to 1800 cm<sup>-1</sup>.

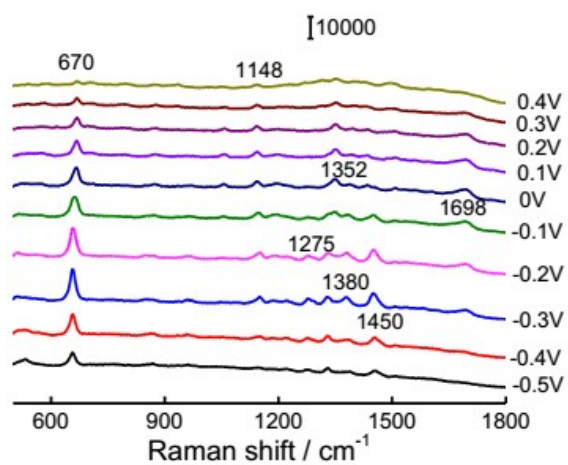


Figure S9. SHINER spectra of guanine adsorption on a Au(111) electrode in 0.1 M  $\text{NaClO}_4$  + 1 mM guanine. Expanded spectral range: 550 to 1800  $\text{cm}^{-1}$ .