

Supporting information

Au@Ag core-shell nanoparticles with hidden internal reference promoted quantitative solid phase microextraction-surface enhanced Raman spectroscopy detection

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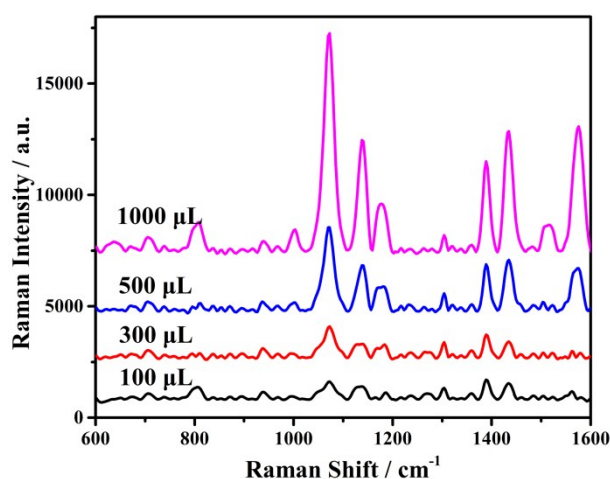


Fig. S1 Raman spectra of Au@4-ATP@Ag NPs with different volume of 4-ATP embedded. The concentration of 4-ATP is 0.01 mM.

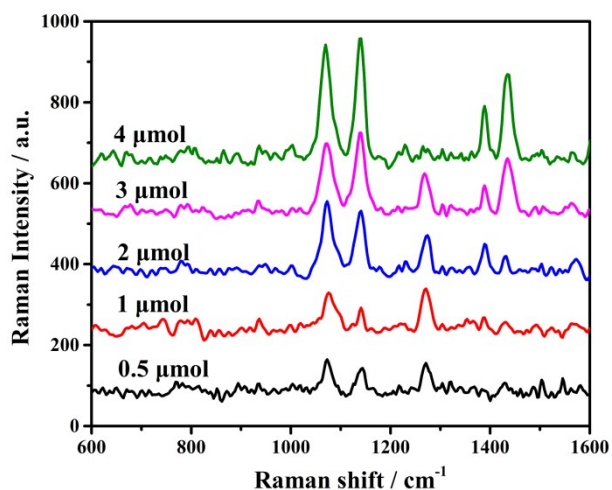


Fig. S2 Raman spectra of Au@4-ATP@Ag NPs prepared by adding different amount of AgNO_3 to form the shell.

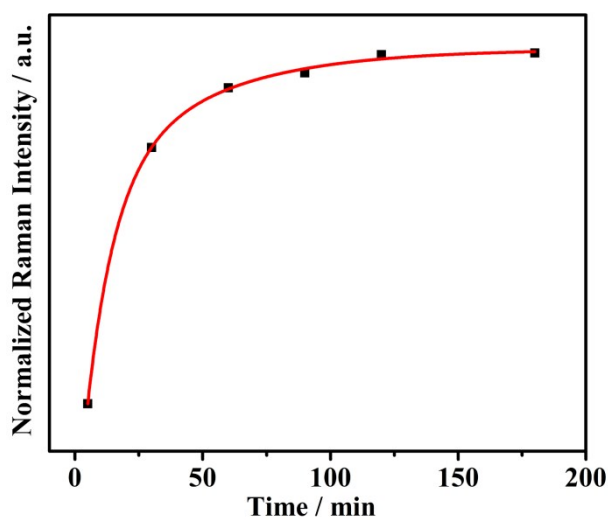


Fig. S3 The kinetic curve of MG adsorption.

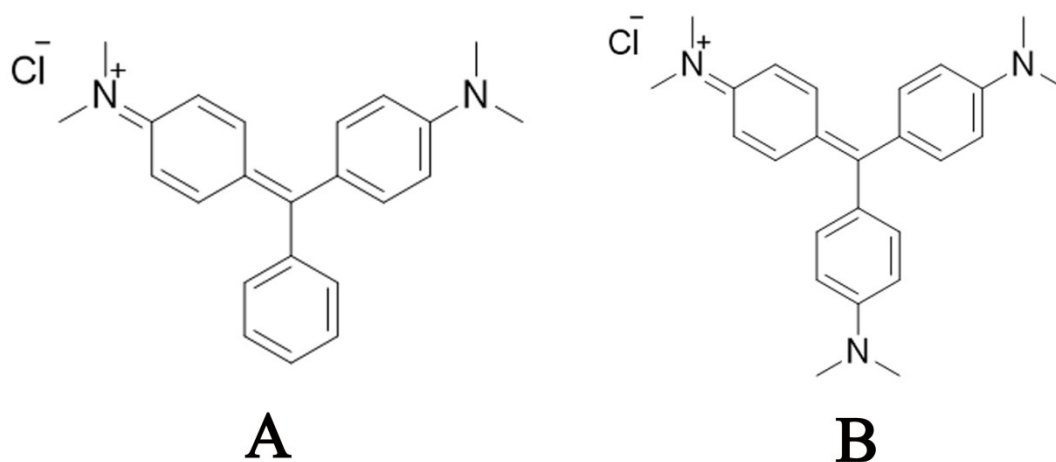


Fig. S4 Chemical structure of MG (A) and CV (B).

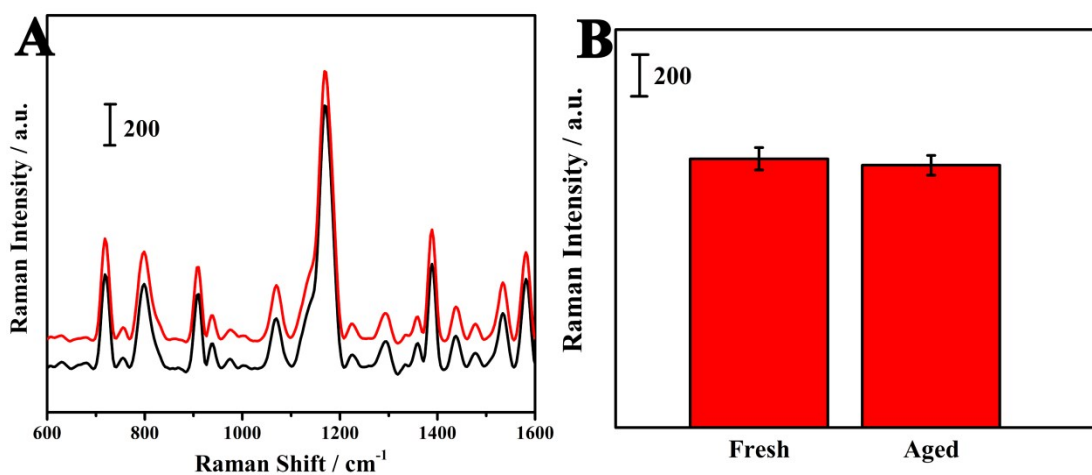


Fig. S5 (A) The SERS spectra of MG on the fresh prepared and aged fibers. (B) The SERS intensity of MG at 1174 cm^{-1} on fresh prepared SPME fibers and on SPME fibers aged for 2 months. The error bars were obtained from five parallel experiments.

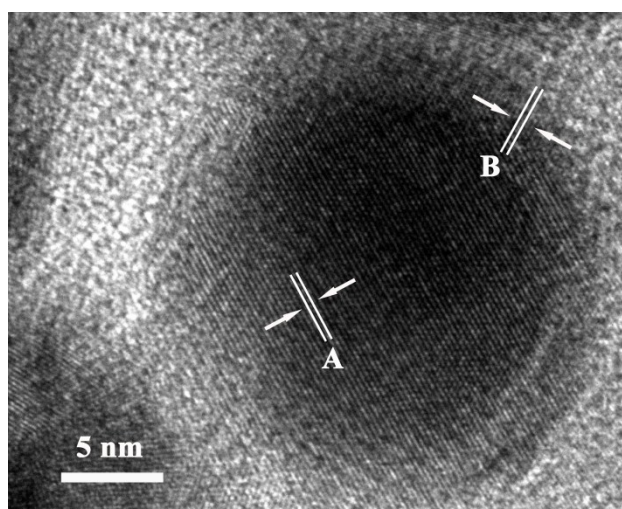


Fig. S6 HRTEM image of the Au@4-ATP@Ag NPs. (A) interplanar distance of gold; (B) interplanar distance of silver.

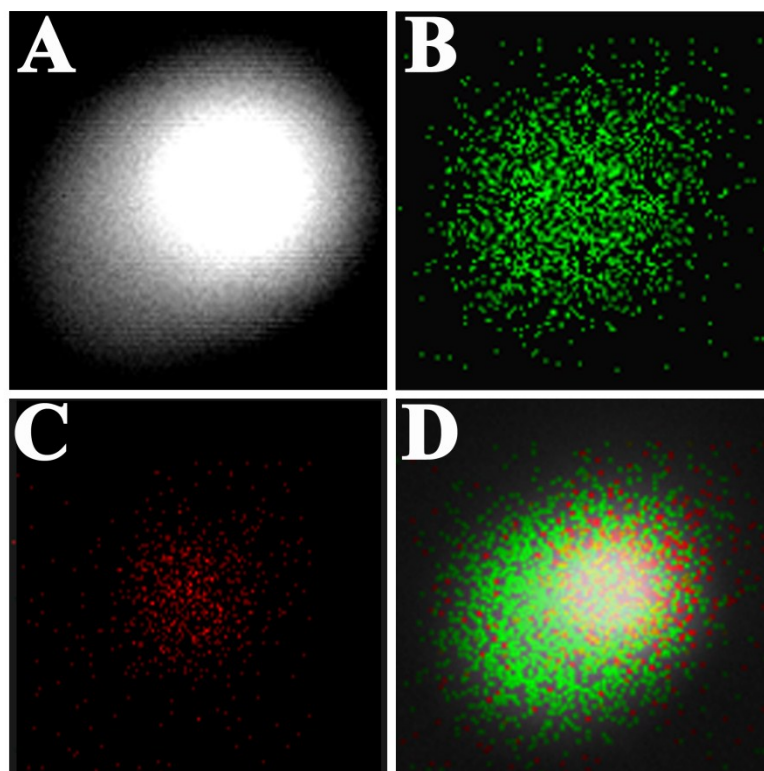


Fig. S7 STEM-HAADF image (A) and EDS elemental mapping images of the Au@4-ATP@Ag NP for Ag map (B), Au map (C) and an overlay of the Au and Ag maps (D).

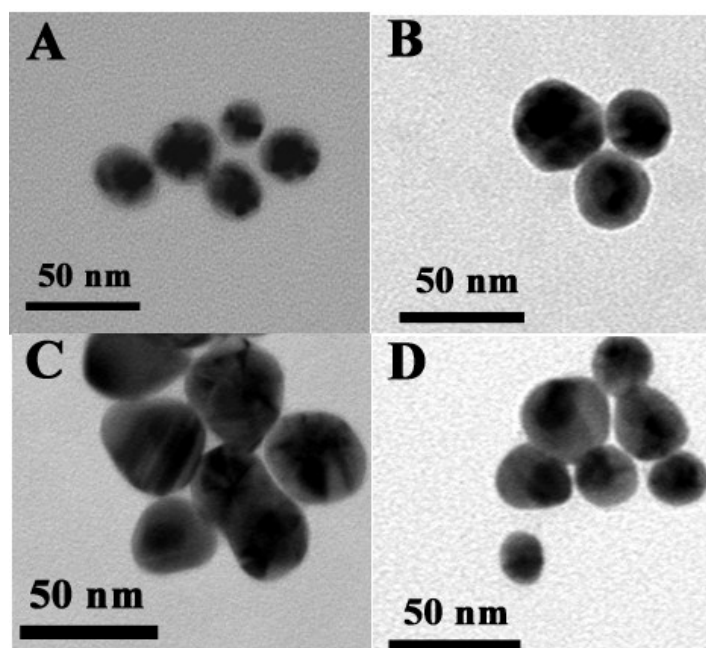


Fig. S8 TEM images of Au@4-ATP@Ag nanoparticles.

Table. S1 The detection of CV compared with other SERS sensor

SERS Substrates	Au sol ¹	Au-Ag core-shell sol ²	Au/ZnO nanostructure ³	Our fiber In this work
Linear range (M)	Not Mentioned	Not Mentioned	10 ⁻⁶ -10 ⁻⁹	5 × 10 ⁻⁸ to 5 × 10 ⁻⁶
R ²	Not Mentioned	Not Mentioned	0.978	0.990
LOD (nM)	1000	100	0.103	1.9

Table. S2 The detection of CV compared with other methods

Methods	LC-MS ⁴	HPLC ⁵	LC-MS-MS ⁶	Our fiber In this work
LOD (μg/kg)	0.18	0.20	0.35	0.78

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