

Electronic Supplementary Information

Gold Nanoflowers with Tunable Sheet-like Petals: Facile Synthesis, SERS Performances and Cell Imaging

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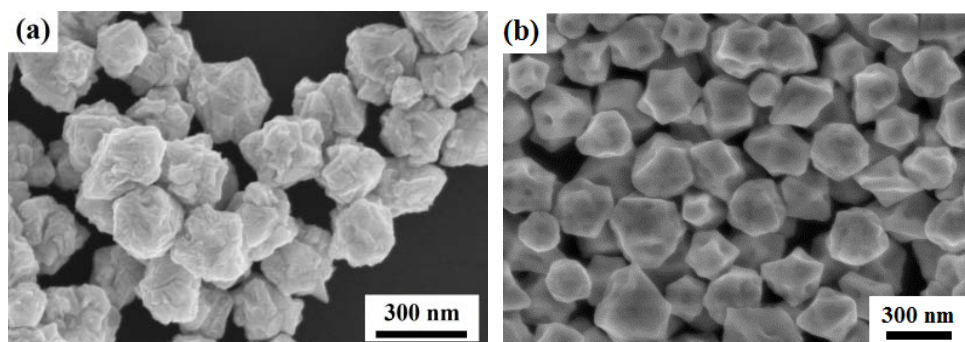


Fig. S1 SEM images of the gold crystals grew for 5 min in the presence (a) or absence (b) of AgNO_3 , respectively.

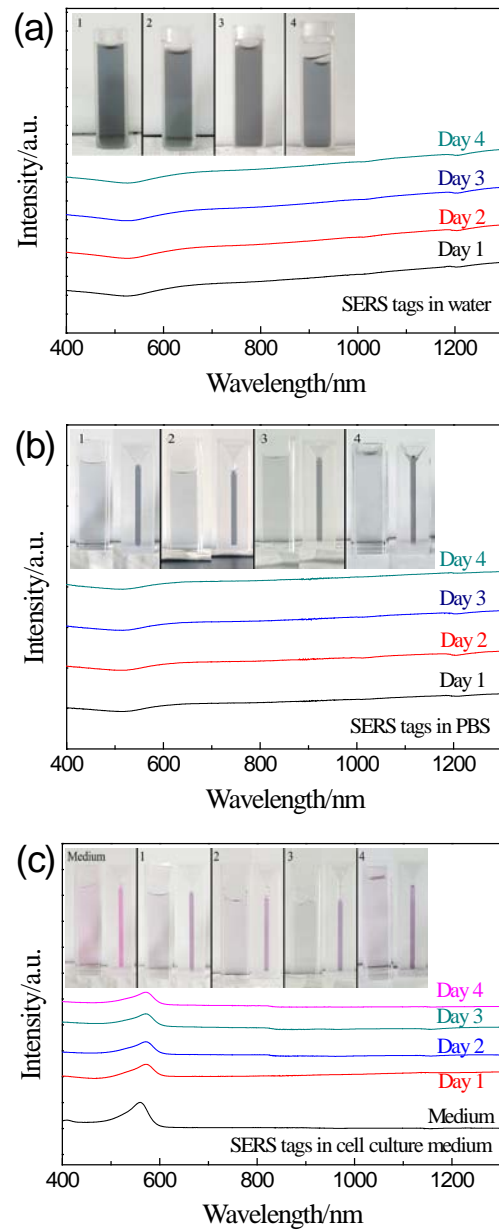


Fig. S2 Stability charecterations of the SERS tags stored in (a) water, (b) PBS, and (c) cell culture medium for one to four days, respectively.

Table S1. Zeta potentials of the Au NSs after each surface modification for preparing multifunctional Au NSs

Materials	Zeta potential (mV)
Au NFs	58.99 ± 0.51
Au NFs-4MBA	40.57 ± 1.09
Au NFs-4MBA (EDC/NHS)	31.34 ± 1.07
Au NFs-4MBA-RGD	24.56 ± 2.08

Calculation of enhancement factor (*EF*)

The *EF* of the nanoflowers synthesized using 10 μL AgNO_3 was calculated according to the following equation ^[1].

$$EF = \frac{I_{\text{SERS}}}{I_{\text{normal}}} \frac{N_{\text{normal}}}{N_{\text{SERS}}}$$

Where I_{SERS} and I_{normal} are the intensity of the SERS and normal Raman at 1064 cm^{-1} , respectively; N_{SERS} and N_{normal} represent the 4-MBA molecules contributing the Raman signal, respectively. The spot size of laser beam focused on the sample is $\sim 100 \mu\text{m}$. For normal Raman detection, 10 μL of 40 mM 4-MBA was pipetted on a silica wafer and the sample spot is estimated as $\sim 31.81 \text{ mm}^2$. For SERS measurements, the Au colloid was concentrated to 200 μL followed by adding 20 μl of 1 mM 4-MBA. Then 10 μL of the mixture was dropped onto a glass slide and the SERS characterizations were performed when the colloid was dry. The sample spot was characterized by microscopy and the area is about 13.84 mm^2 . According to the SERS and normal Raman spectra of 4-MBA shown in Fig. S3, the ratio of I_{SERS} to I_{normal} is obtained to be 7.30×10^2 . The *EF* of the 10 μL AgNO_3 product is estimated to be 1.40×10^5 .

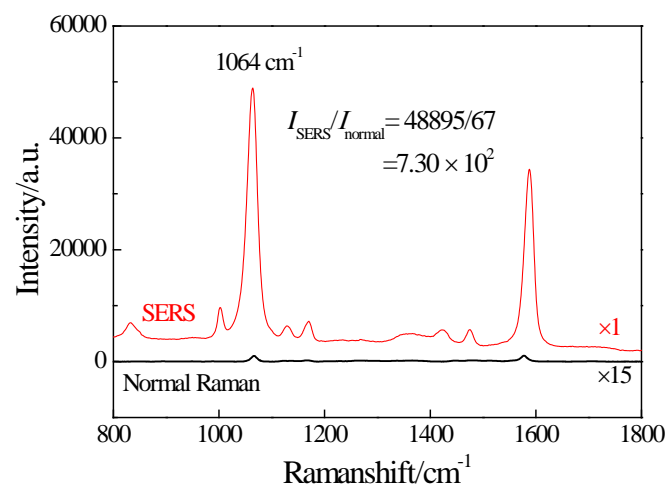


Fig. S3 SERS (red) and normal Raman (black) spectra, in which the intensity of normal Raman signal is magnified fifteen times.

Referance

- [1] Le Ru E C, Blackie E, Meyer M and Etchegoin P G, *J. Phys. Chem. C*, 2007, **111**, 13794-13803.