Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Synthesis of size-tunable chitosan encapsulated gold-silver nanoflowers and its application in SERS imaging of living cells

Guannan Zhang, Junrong Li, Aiguo Shen* and Jiming Hu

Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education), College of Chemistry & Molecular Sciences, Wuhan University, Wuhan, 430072, China.

E-mail: agshen@whu.edu.cn

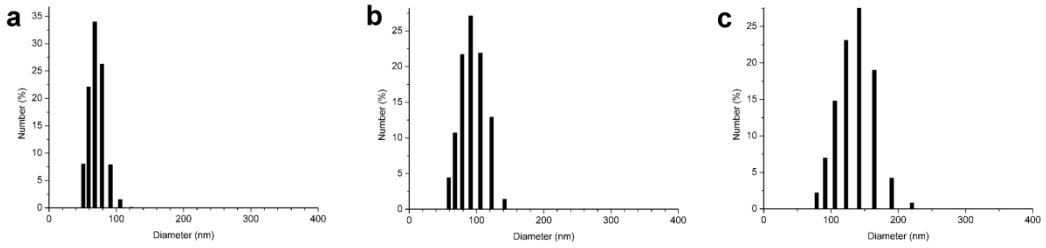

Fig. S1 Dynamic light scattering (DLS) size data obtained from the nanoflowers prepared with different chitosan concentration (a. 100 μg/mL, b. 50 μg/mL, c. 20 μg/mL).

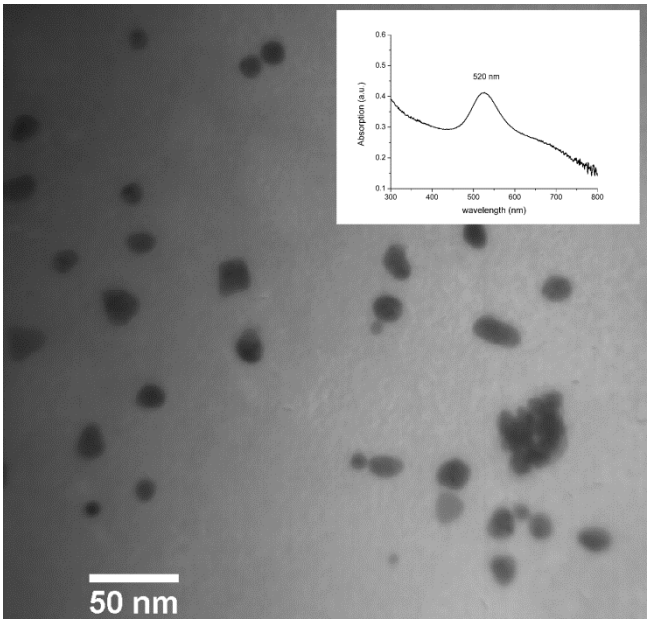

Fig. S2 TEM and UV-*vis* spectrum of gold nanoparticles prepared with 300 μg/mL chitosan.

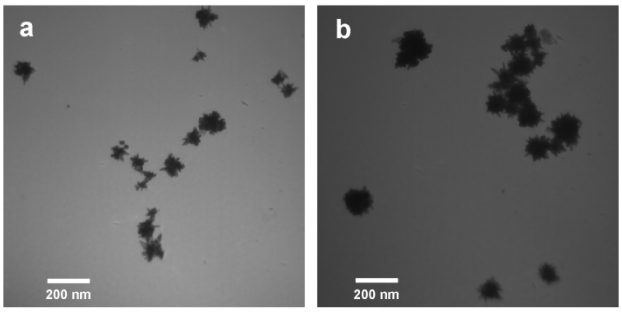

Fig. S3 TEM images of Au/Ag nanoflowers synthesized by adding CS after (a. 1 min, b.5 min) ascorbic acid was introduced.

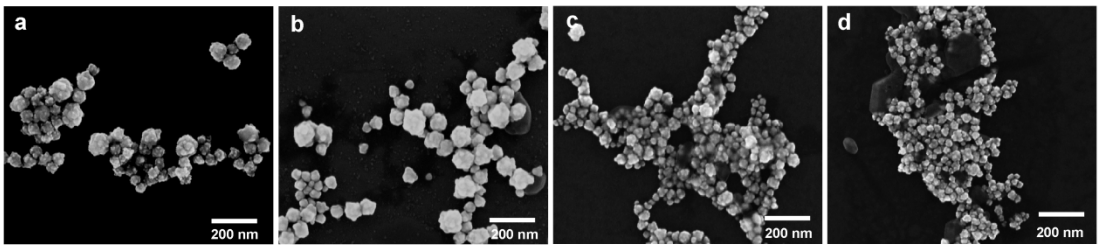

Fig. S4 SEM images of AuNFs prepared from various concentration of CS (a. 5 μg/mL, b. 10 μg/mL, c. 30 μg/mL, d. 50 μg/mL).

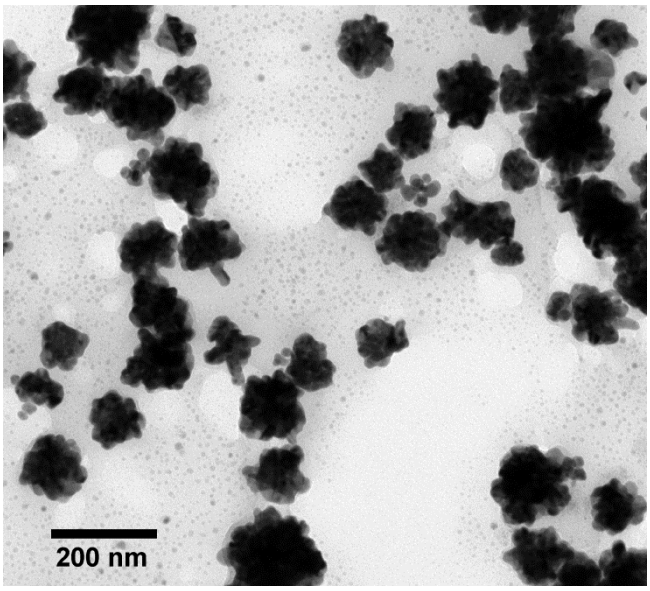

Fig. S5 TEM image of nanoflowers prepared with 100 μL $AgNO_3$ (3mM).

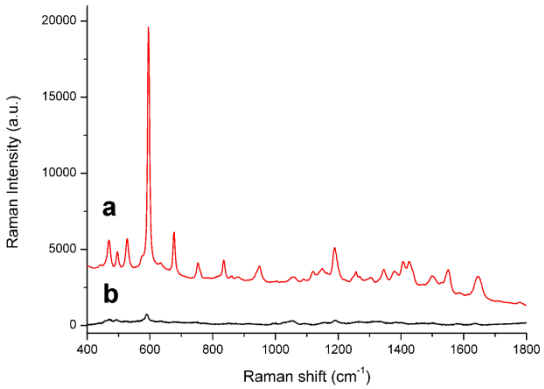

Fig. S6 (a) SERS spectra of 1 μM CV on 80 nm gold-silver nanoflowers and (b) Raman spectra of 0.1 M CV. Each spectrum was the result of averaging 5 scans.

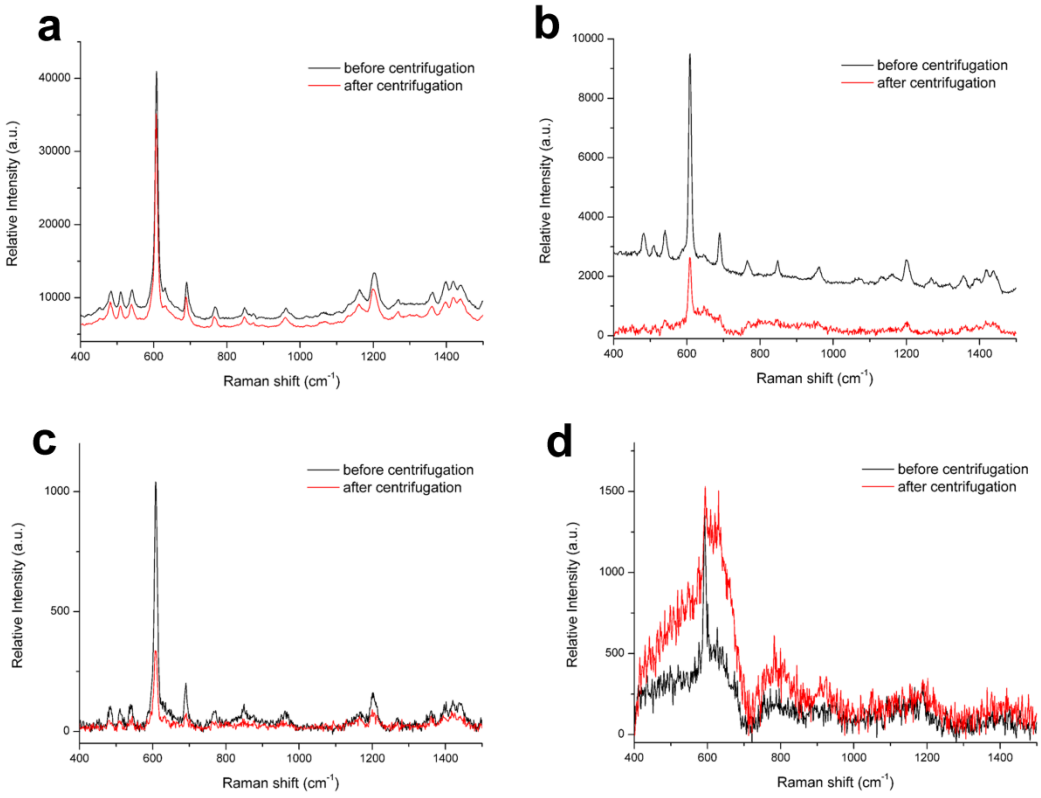

Fig. S7 SERS spectra (before and after centrifugation) of various products with CV added at 30 s (a), 5 min (b), 10 min (c), 30 min (d) after ascorbic acid was introduced.

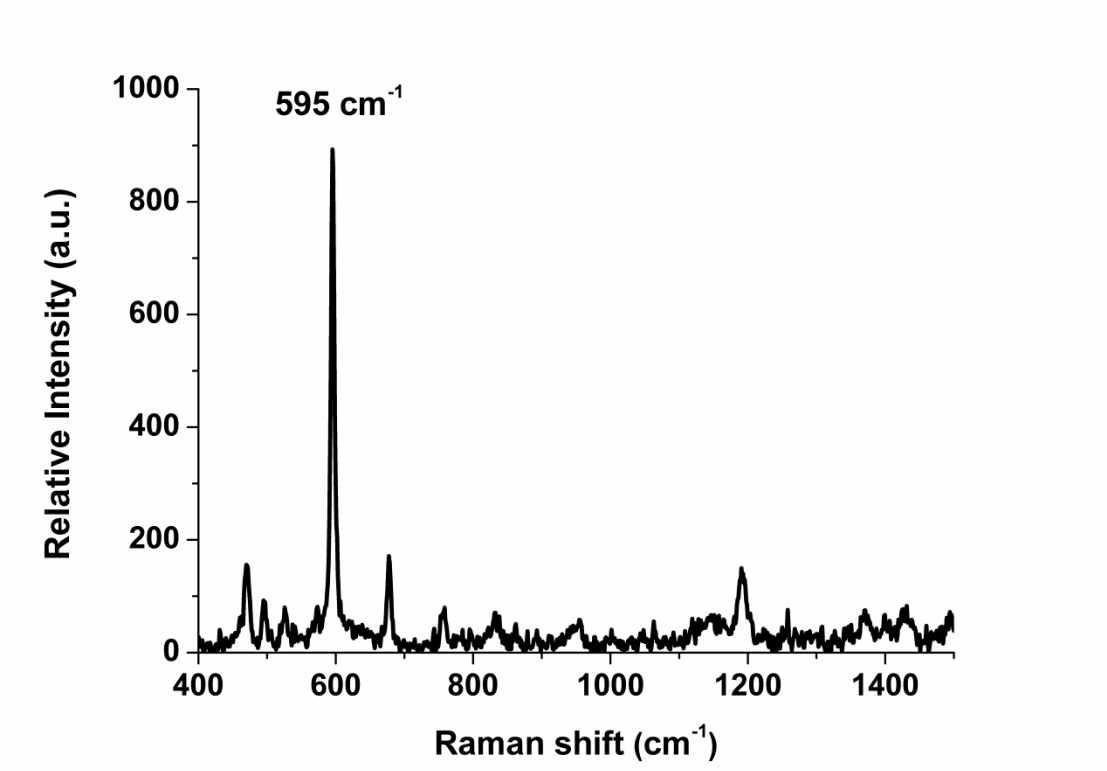

Fig. S8 SERS spectrum of the targeted nanoflowers in the cell.

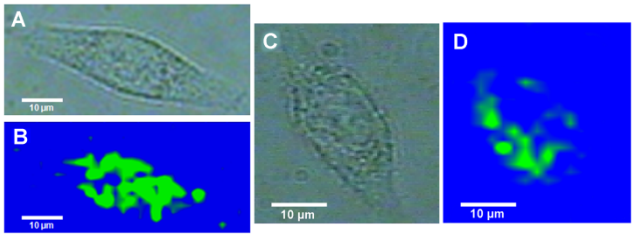

Fig. S9 SERS mapping results of SERS tag with (A and B) and without (C and D) FA targeting when the incubation time was prolonged to 4 h.