# Supporting Information:

## Highly Surface-roughened Caterpillar-like Au/Ag Nanotubes for Sensitive and Reproducible Substrates of Surface Enhanced Raman Spectroscopy

Shengchun Yang[a]*, Atao Yang[a,b], Jinglei Bi [a], Jie Zhang[a] Anran Chen[a] and Shuhua Liang[b]*

[a] School of Science, Key Laboratory of Shaanxi for Advanced Materials and Mesoscopic Physics, State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Collaborative Innovation Center of Suzhou Nano Science and Technology, Xi'an 710049, ShaanXi, People's Republic of China.
[b] School of Material Science and Engineering, Xi'"an University of Technology, Xi'an 710048, China.

* Correspondence information: Shengchun Yang, School of Science, Key Laboratory of Shaanxi for Advanced Materials and Mesoscopic Physics, State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University, Collaborative Innovation Center of Suzhou Nano Science and Technology, Xi'an 710049, ShaanXi, People's Republic of China. ysch1209@mail.xjtu.edu.cn, +86-29-82663034；Shuhua Liang, School of Material Science and Engineering, Xi'"an University of Technology, Xi'an 710048, China. liangsh@xaut.edu.cn, +86-29-82312181；
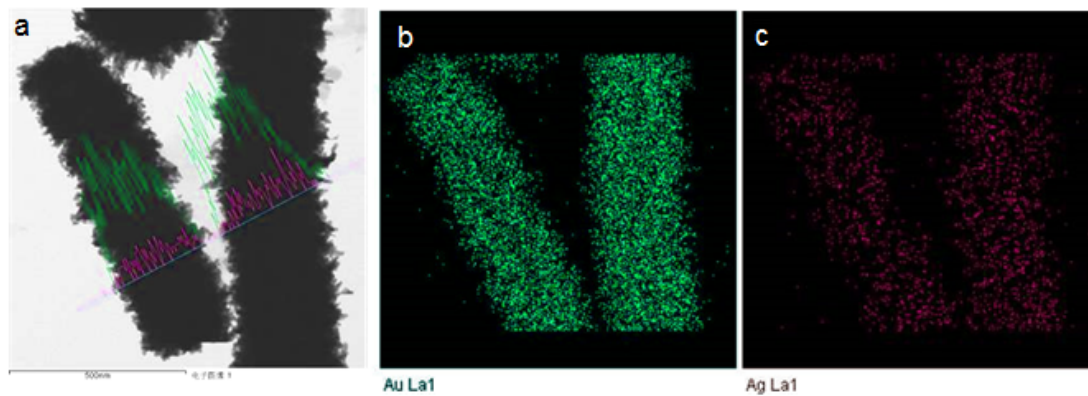
Fig.S1 (a) HADDF and element distribution image along a straight line (b) elements distribution of caterpillar-like Au-Ag nanorods.
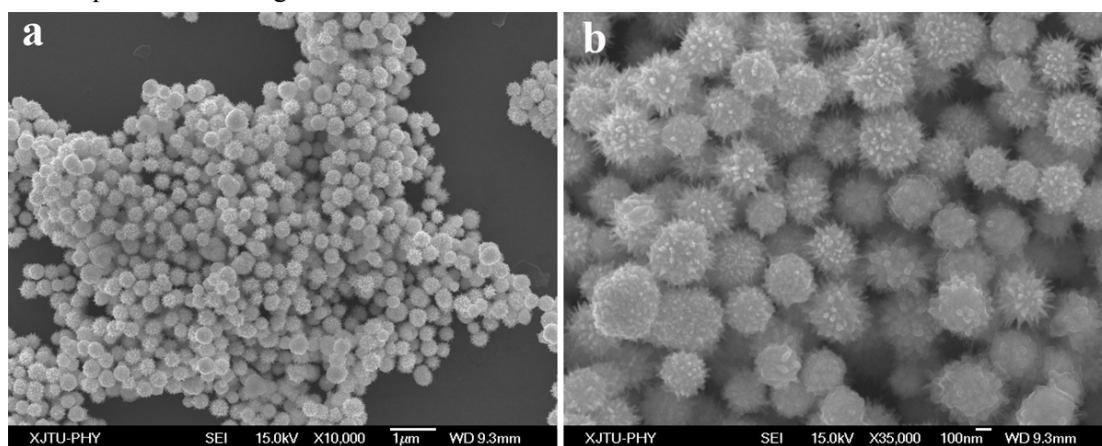


Fig.S2 SEM image of the sea-urchin-like gold nanoparticles synthesized with spherical Ag NPs as sacrificial template.
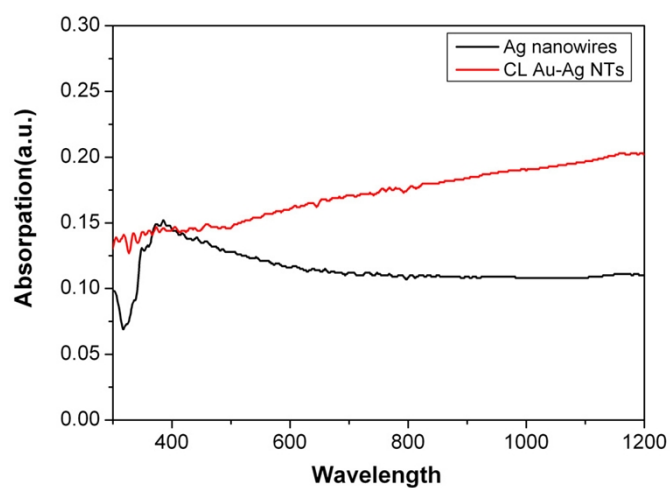


Fig.S3. UV-vis absorption spectra of CL Au/Ag nanotube and Ag nanowires.