Electronic Supplementary Material (ESI) for Analytical Methods.
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Supporting Information for:

A Tip-Gap Meshing like Bilayer SERS Substrate for Highly Sensitive Detection

Liang Lv,[a] Junrong Li,[b] Wei Fang,[a] Aiguo Shen,[a*] Jiming Hu,[a]

[a] Key Laboratory of Analytical Chemistry for Biology and Medicine, Ministry of Education, College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, P. R. China.

[b] Centre for Personalized Nanomedicine, Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Brisbane, Queensland, 4072, Australia.

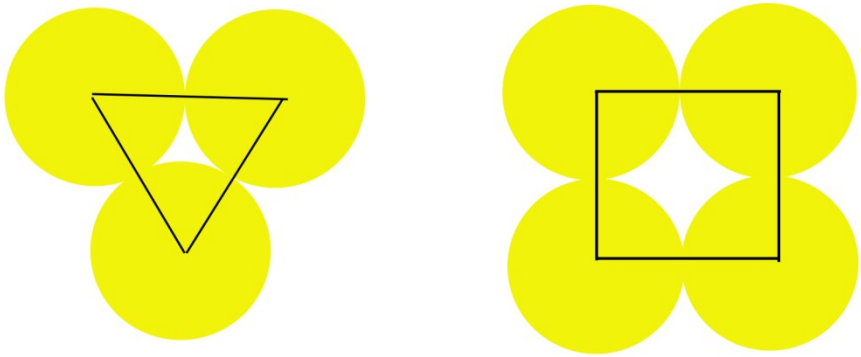

Fig. S1 Au NSs of aligned or misaligned configuration.

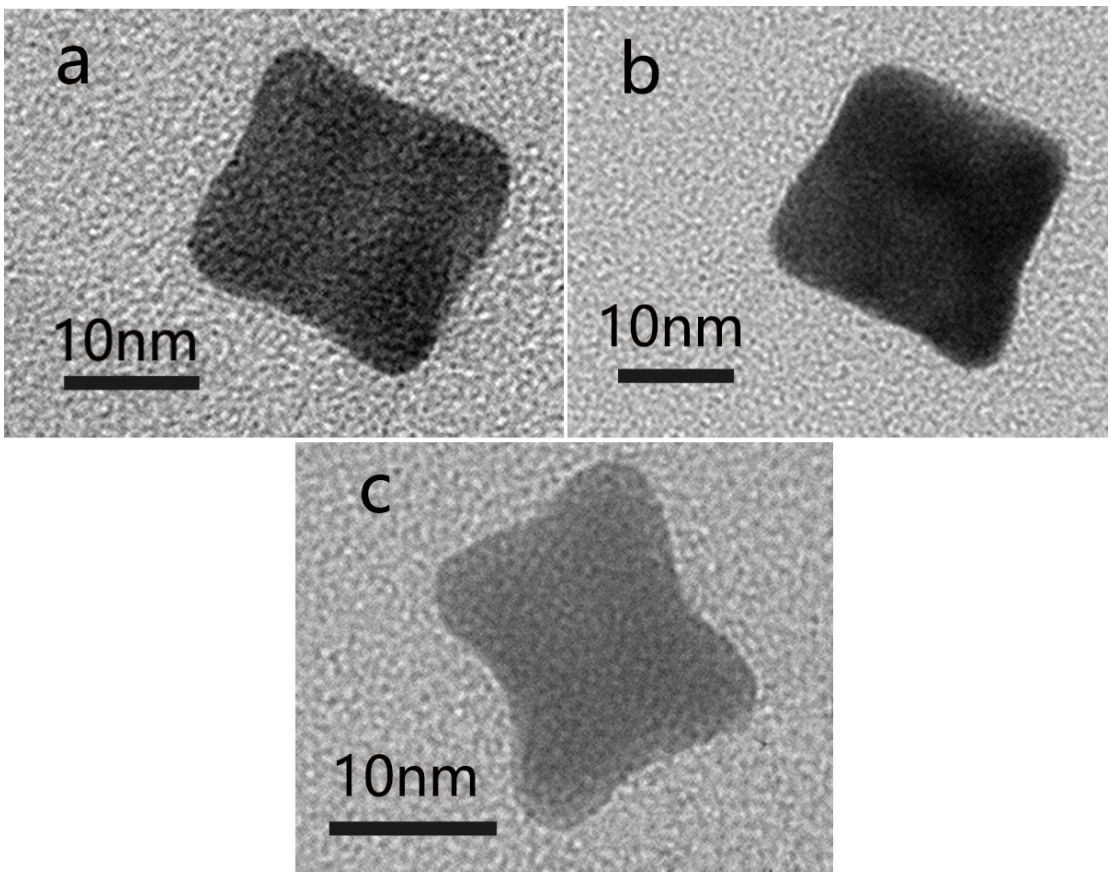

Fig. S2 TEM images of intermediate products of the CENCs, reaction for 30 min (a), 90 min (b), 120 min (c).

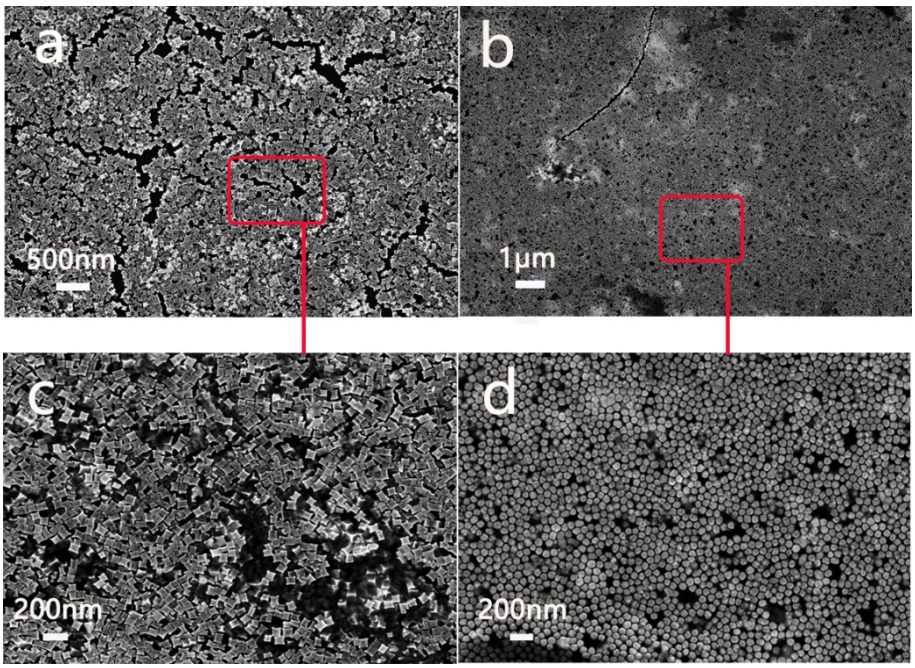

Fig. S3 SEM images of (a and c), CENCs monolayer, (b and d) Au NSs monolayer.

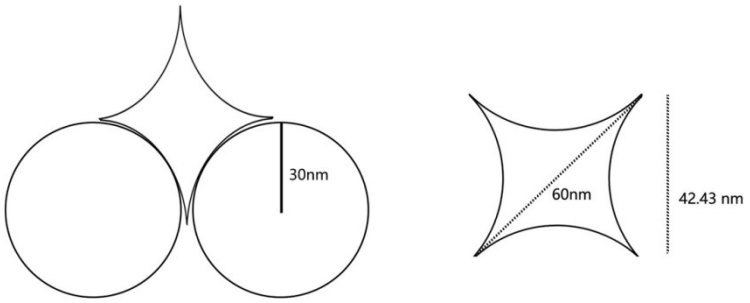

Fig. S4 Geometric calculation of the size of CENCs in condition of 60nm Au NSs

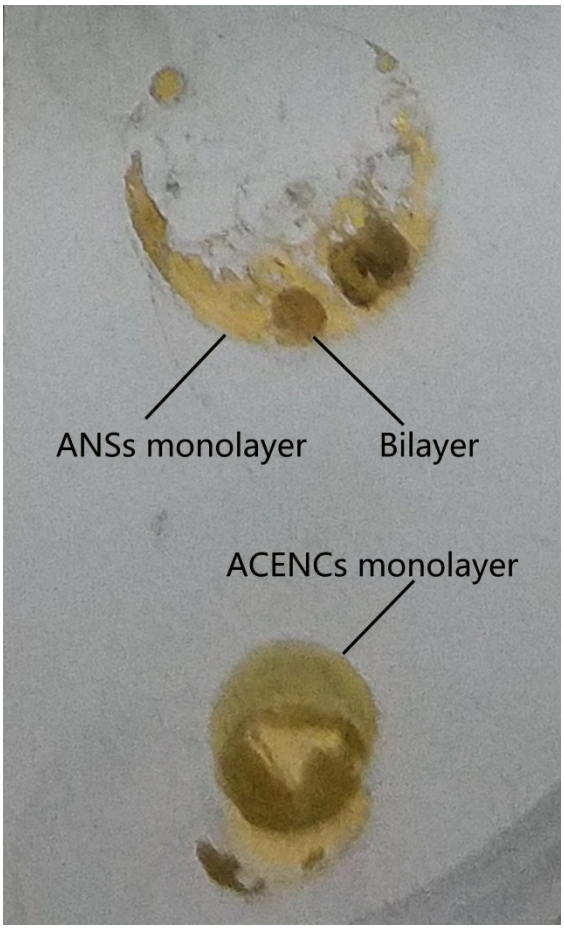

Fig. S5 Images of CENCs monolayer, Au NSs monolayer and bilayer substrate

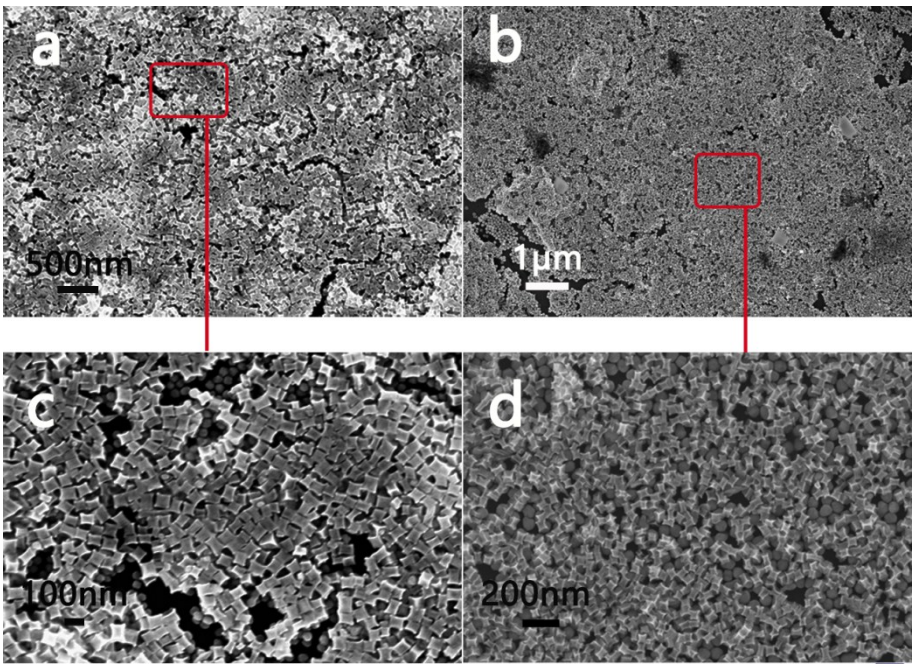

Fig. S6 SEM images of (a and c) “non-meshing” bilayer, substrates, b and d “tip-gap” bilayer substrate.

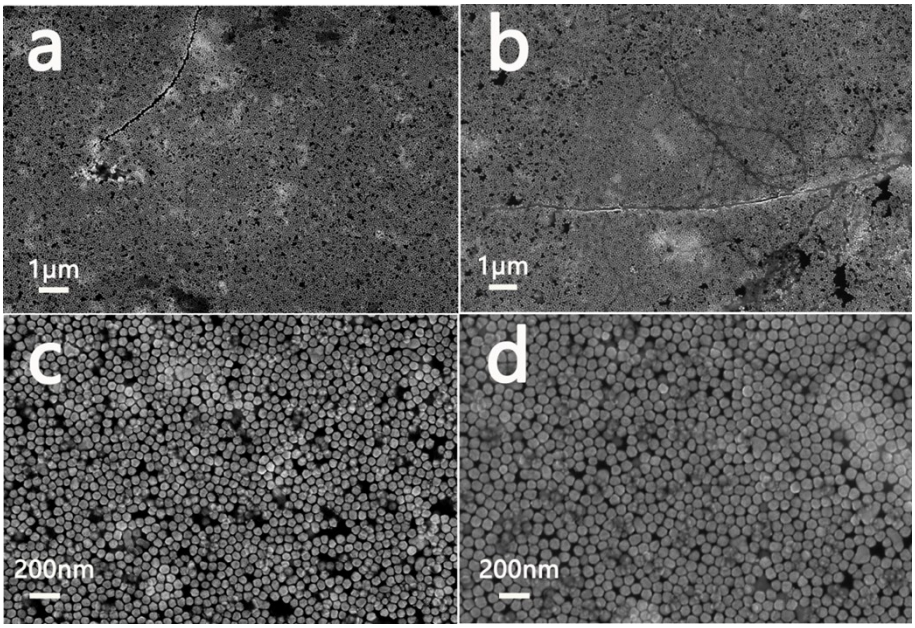

Fig. S7 SEM images of (a and c), Au NSs monolayer before dropping sample, (b and d) after dropping sample.

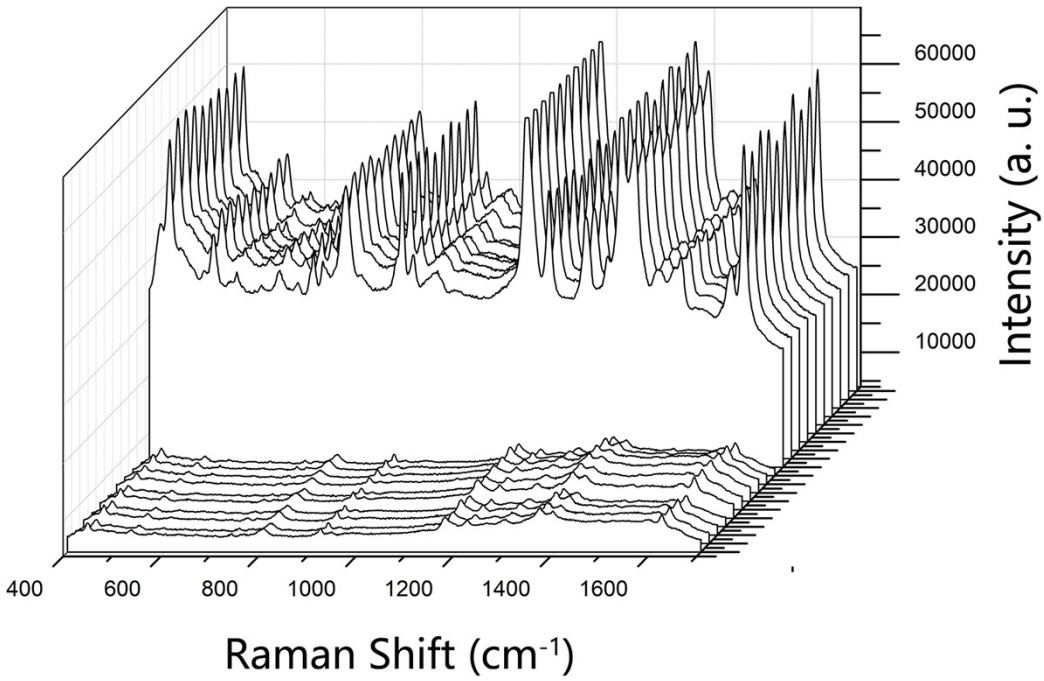

Fig. S8 SERS spectra of 10^{-7} and 10^{-11} M MG collected from ten different positions on the tip-gap meshing SERS substrate.

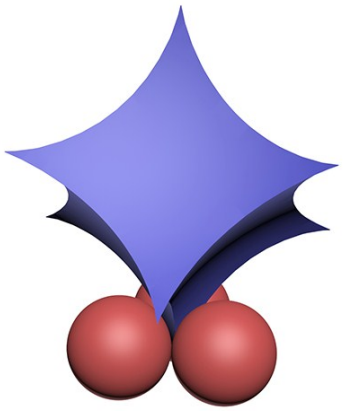

Fig. S9 Depict of the tip-gap meshing structure when the size of CENCs is much bigger than Au NSs.

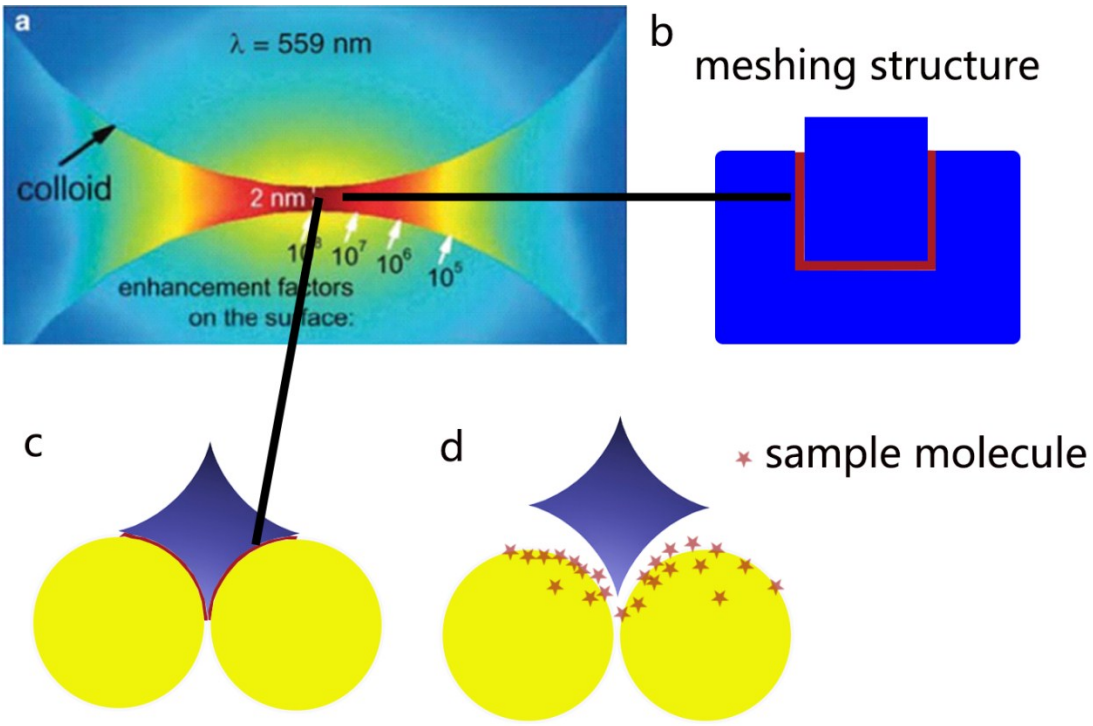

Fig. S10 Enhancement factor distribution in a hot spot formed between two gold nanoparticles separated by 2 nm plotted on a logarithmic scale (a).[1] Scheme illustration of SERS hot-spots of meshing structure (b), tip-gap meshing structure. Detection schematic diagram of the protocol we proposed (d).

References

1. P. G. Etchegoin and L. Ru, *Phys. Chem. Chem. Phys.*, 2008, **10**, 6079-6089.