# Supporting information

# A sensitive SERS-based sandwich immunoassay platform for simultaneous multiple detection of foodborne pathogens without interference

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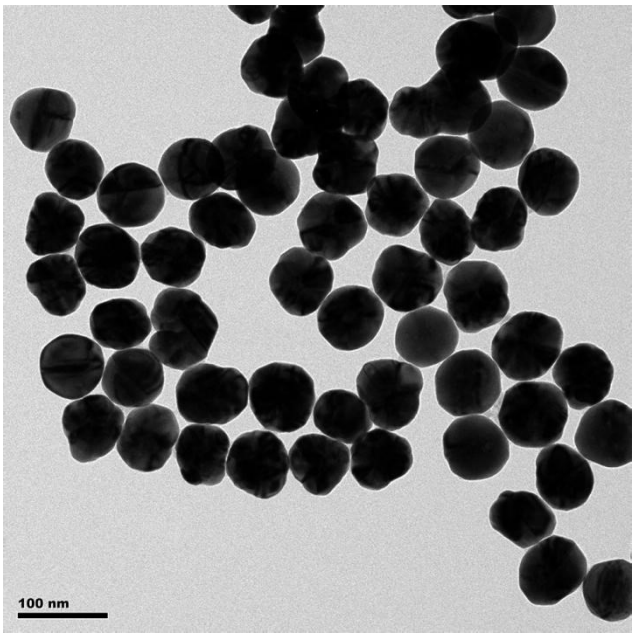
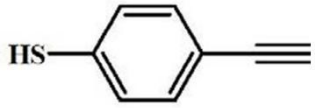
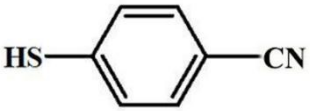



**Figure S1.** TEM image of Au nanoparticles.




OPE0




MBN

**Figure S2.** The chemical structure of the two Raman reporters.

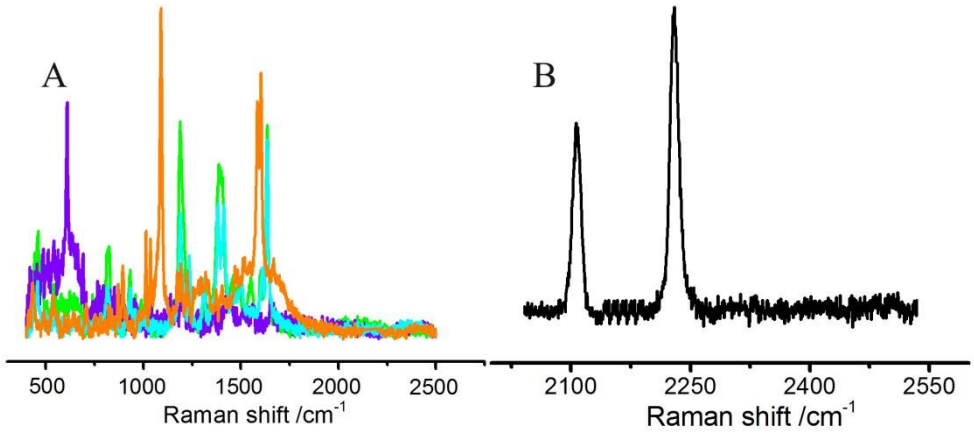



**Figure S3.** (A) The overlapping signal from four typical conventional Raman reporters in the fingerprint region (CV, CVa, malachite green, 4-MBA); (B) Raman spectra of two SERS probes marked with OPE0 and MBN.

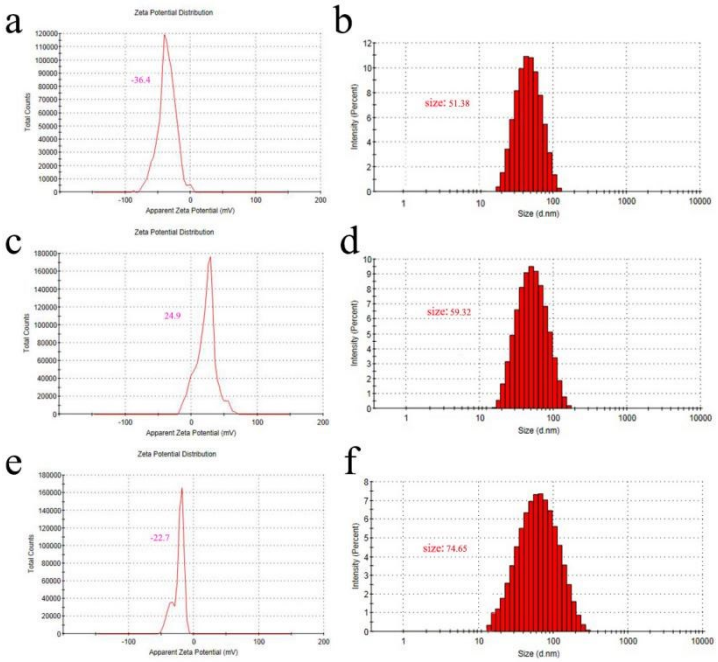



**Figure S4.** Zeta and dynamic light scattering (DLS) data for (a, b) Au NPs; (c, d) Au NPs@pLL; (e, f) Au NPs@pLL@Ab.

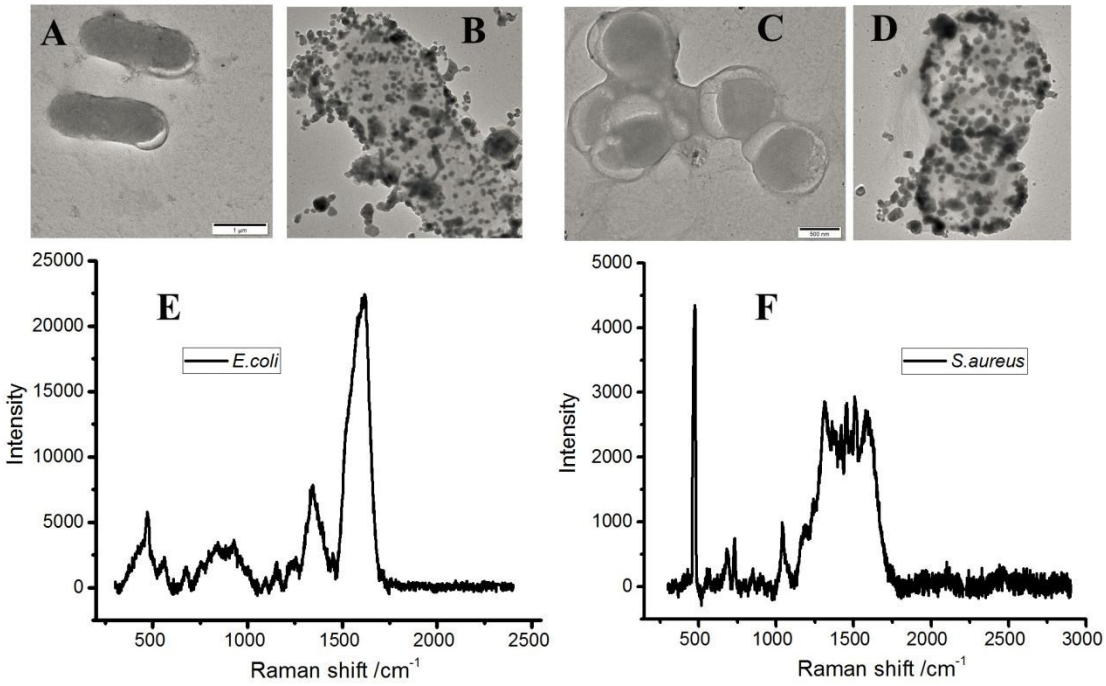



**Figure S5.** TEM and SERS spectra of *E.coli and S.aureus*. (A, C) was the TEM image of *E.coli and S.aureus*; (B, D) was the TEM image of *E.coli and S.aureus* after the loading of Au NPs; (E, F) was the SERS spectra of *E.coli and S.aureus*, respectively.

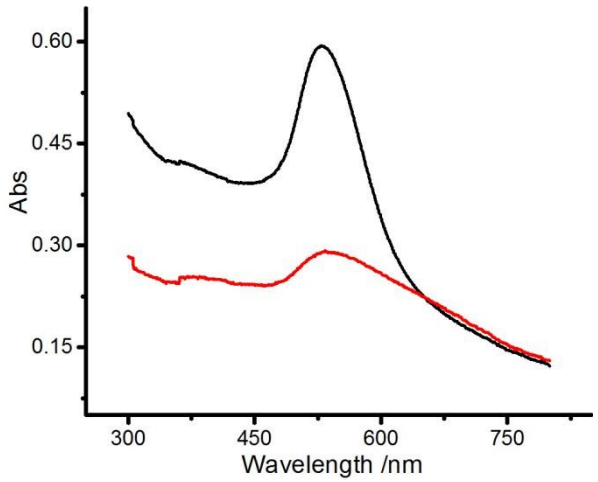



**Figure S6.** The absorption spectra of Au NPs with (red line) and without (black line) salt addition.

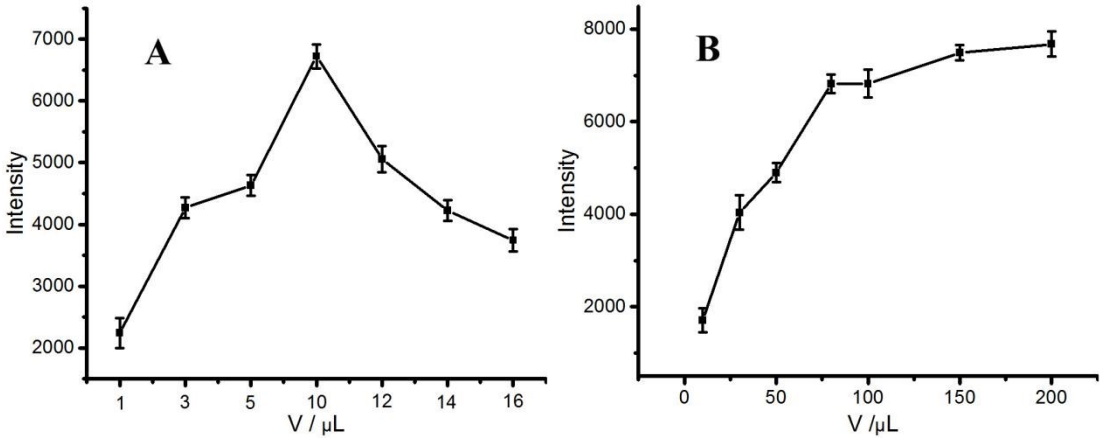



**Figure S7.** Optimization experiment of capture probes and SERS probes for *E.coli*.

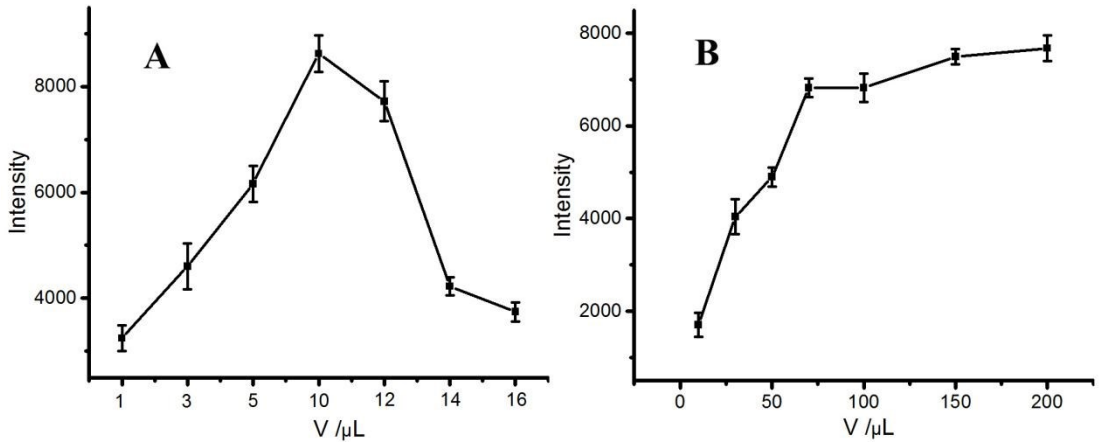



**Figure S8.** Optimization experiment of capture probes and SERS probes for *S.aureus*.

**Table S1.** Comparison of LOD with the other existing SERS based methods.

| Bacteria | LOD (cfu/mL) | Refs. |
|---|---|---|
| *S. aureus*<br>*S. typhimurium* | 1000<br>1000 | Wang et al., 2011[1] |
| *S. aureus*<br>*S. typhimurium* | 35<br>15 | Zhang et al., 2015[2] |
| *E.coli*<br>*S. aureus* | 50<br>20 | Zhang et al., 2018[3] |
| *E. Coli*<br>*F. tularensis* | 100<br>100 | Hongdeok et al., 2016[4] |
| *S. aureus*<br>*E.coli*<br>*Salm* | 100-1000 | Ravindranath et al.,2011[5] |
| *E.coli*<br>*S. aureus* | 10<br>25 | Our method |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