

## Supplementary information

### **Direct Detection of Bacteria Using Positively-charged Ag/Au Bimetallic Nanoparticles: A Label-free SERS Study Coupled with Multivariate Analysis**

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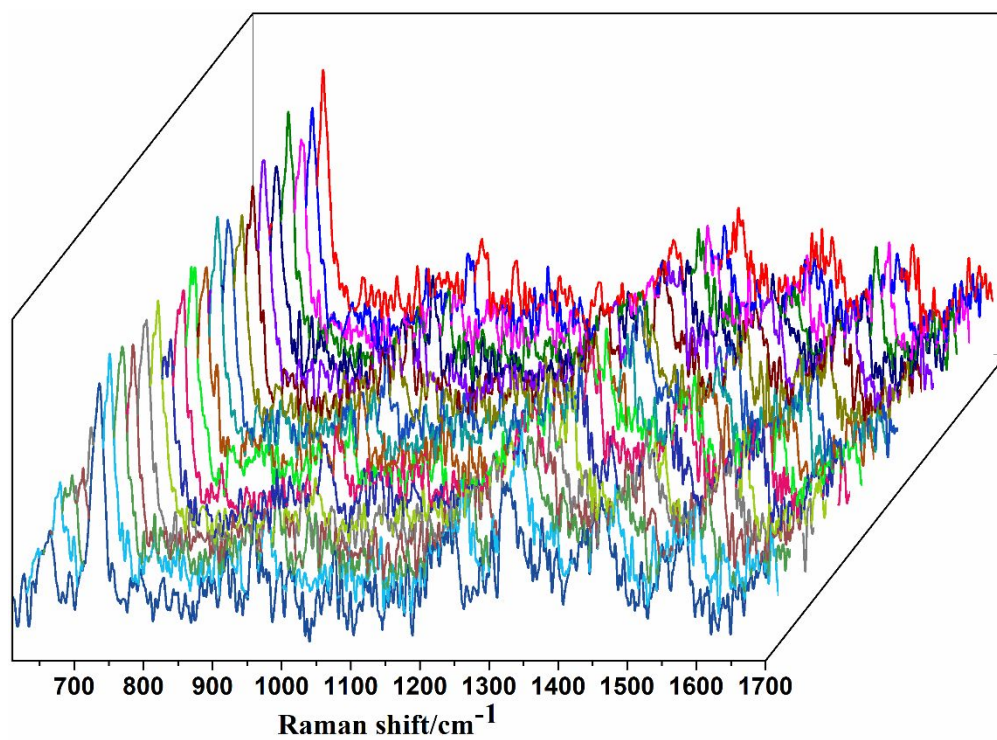
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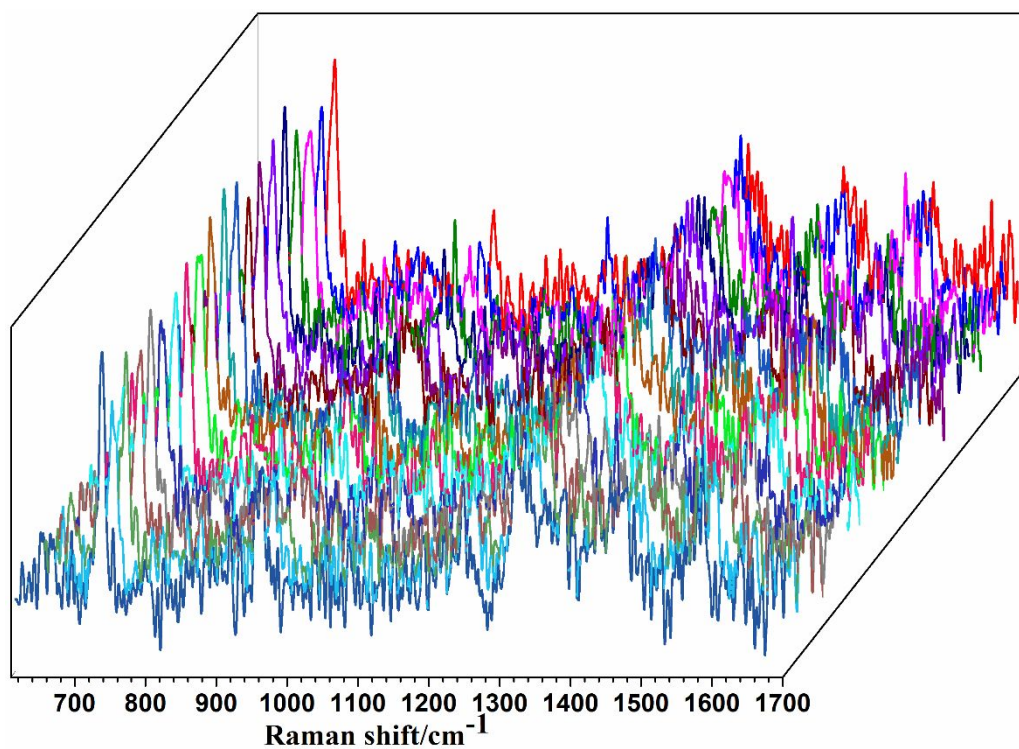
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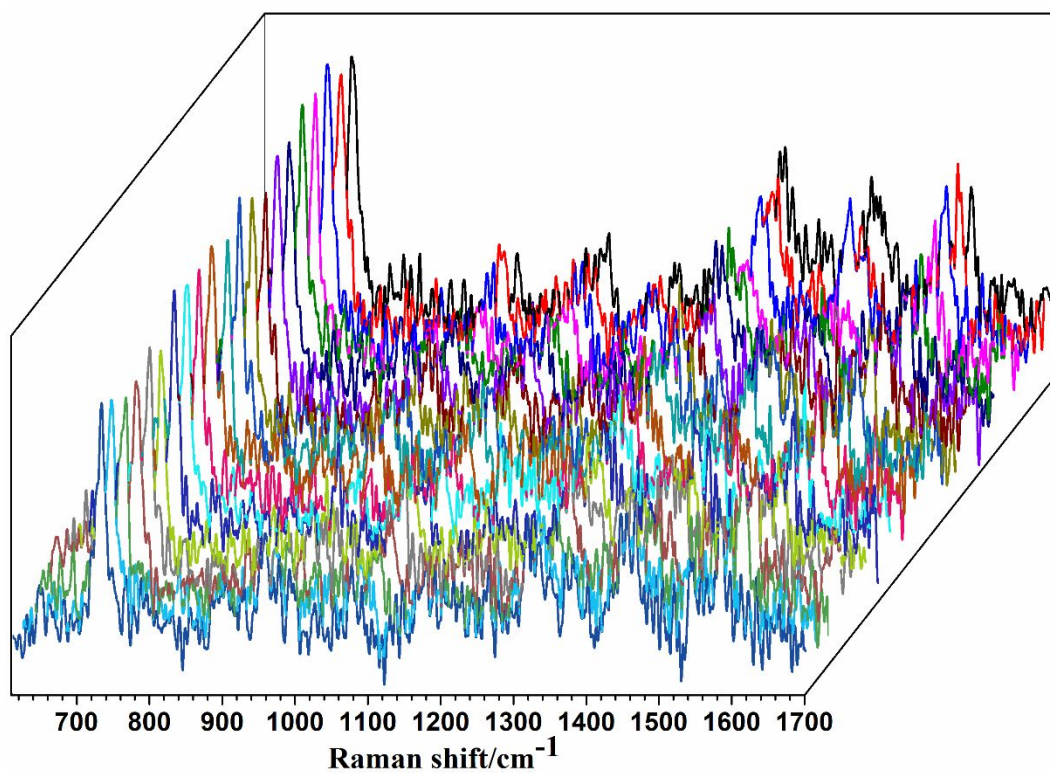
Point-to-point reproducibility of SERS signals of *Escherichia coli* (Figure S1), *Salmonella typhimurium* (Figure S2), and *Bacillus subtilis* (Figure S3) (can be seen clearly by the SERS marker band at  $730\text{ cm}^{-1}$ )



**Figure (S1):** SERS spectra of *E. coli*. with Ag/Au bmNPs at different points



**Figure (S2):** SERS spectra of *S. typhimurium* with Ag/Au bmNPs at different points



**Figure (S3):** SERS spectra of *Bacillus subtilis* with Ag/Au bmNPs at different points

**Table S1: Vibrational assignments of SERS bands of 4-MPY.<sup>1</sup>**

Raman shift/cm<sup>-1</sup> : Assignments

680 cm<sup>-1</sup> :  $\beta$ (CCC)/ $\beta$ (CN)

798 cm<sup>-1</sup> :  $\gamma$ (C-H)

1009 cm<sup>-1</sup> : Ring breathing

1045 cm<sup>-1</sup> :  $\beta$ (C-H)

1076 cm<sup>-1</sup> :  $\beta$ (C-H)

1288 cm<sup>-1</sup> :  $\beta$ (C-H)

1455 cm<sup>-1</sup> :  $\nu$ (C=C/C=N)

1580 cm<sup>-1</sup> :  $\nu$ (CC)

**References:**

1. Guo, H.; Ding, L.; Mo, Y., Adsorption of 4-Mercaptopyridine onto Laser-Ablated Gold, Silver and Copper Oxide Films: A Comparative Surface-Enhanced Raman Scattering Investigation. *Journal of Molecular Structure* 2011, 991, 103-107.