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Supplementary Materials

Functionalized magnetic nanobeads for SERS-based detection of Staphylococcus aureus

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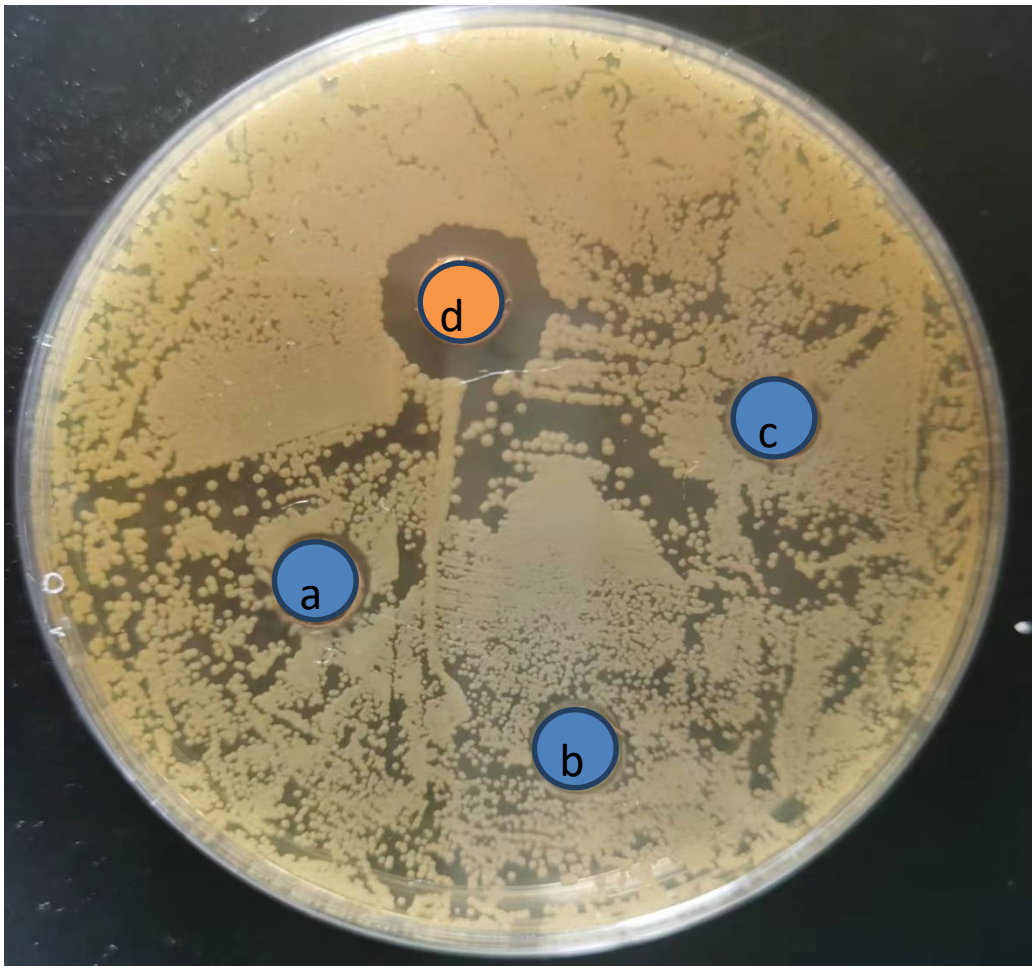


Fig. S1 Antibacterial circle test of (a) MBs, (b) PEG-MBs, (c) BSA-PEG-MBs, and (d) TEI-BPBs.

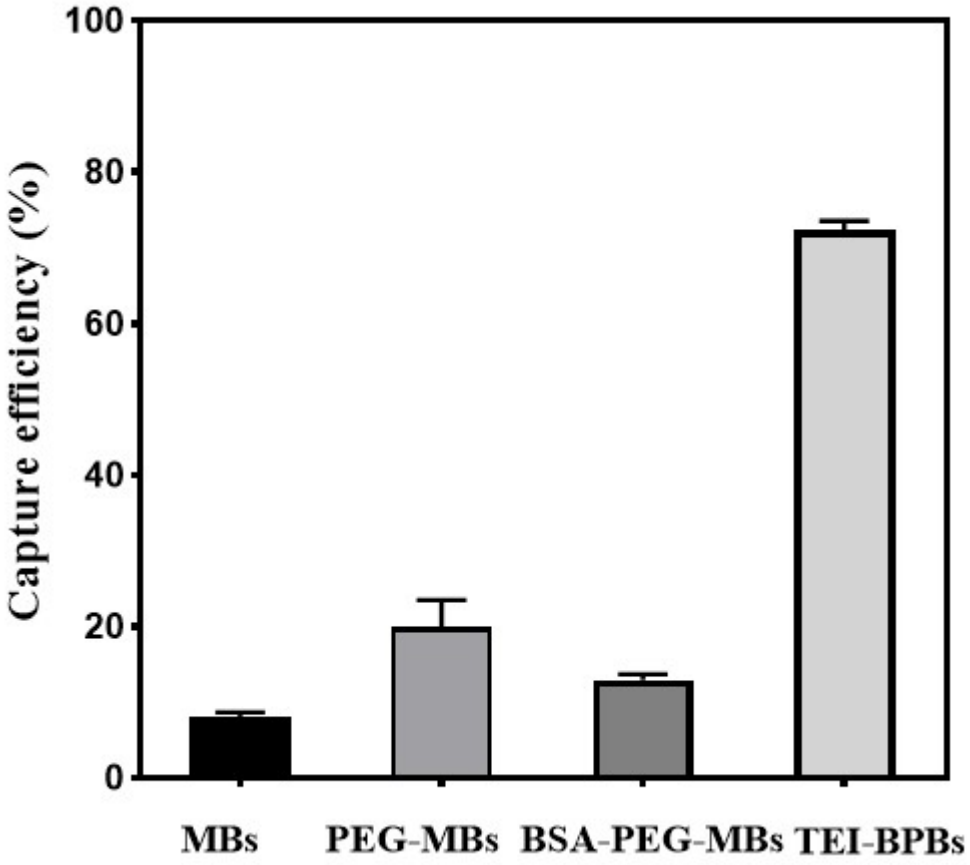


Fig. S2 The capture efficiency of MBs, PEG-MBs, BSA-PEG-MBs and TEI-BPBs

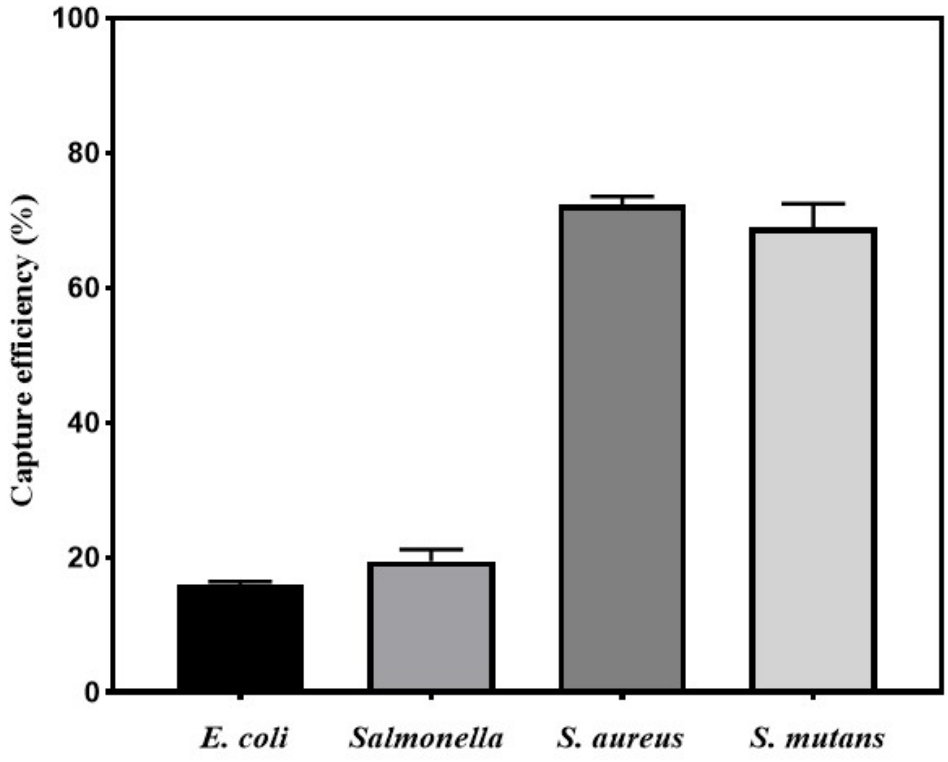
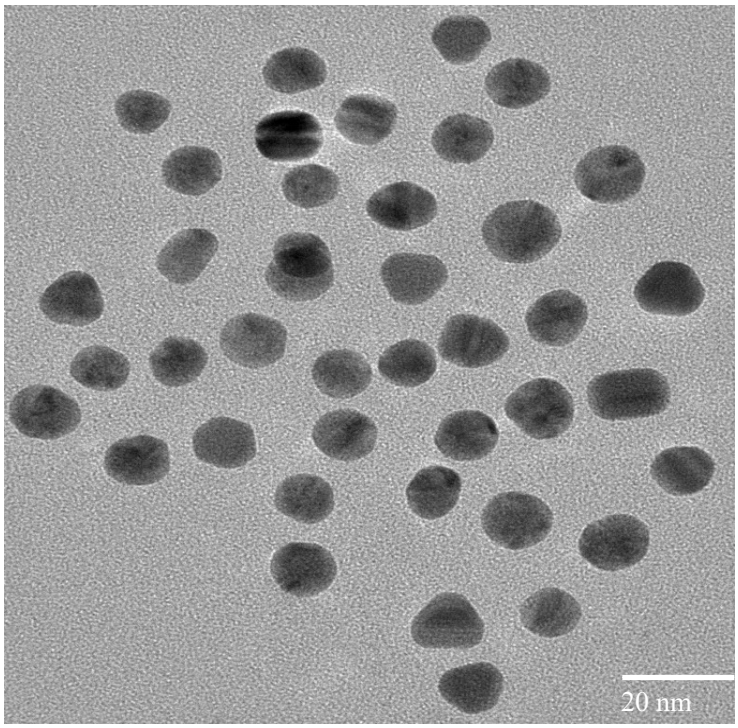


Fig. S3 Capture efficiency of TEI-BPBs to *E. coli*, *Salmonella*, *S. aureus* and *S. mutans*

A



B

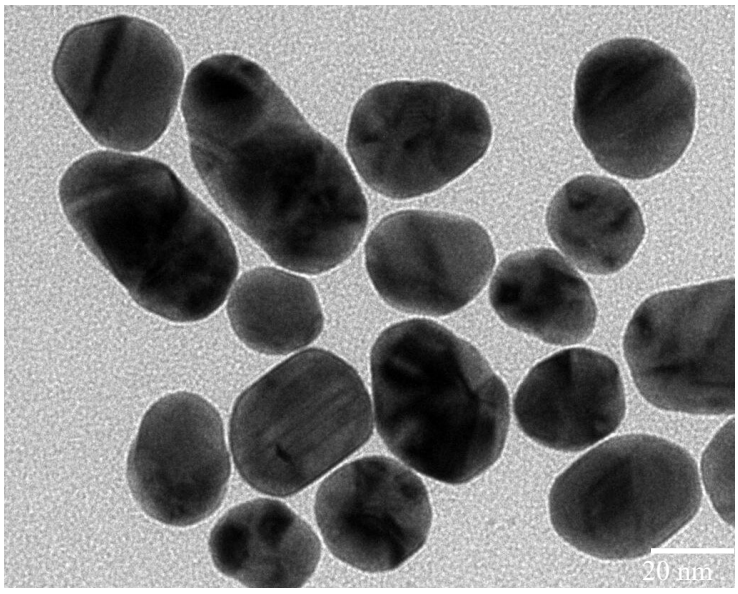


Fig. S4 Comparison of particle distribution before and after coupling of gold nanoparticles. (A) Au; (B) SERS tags

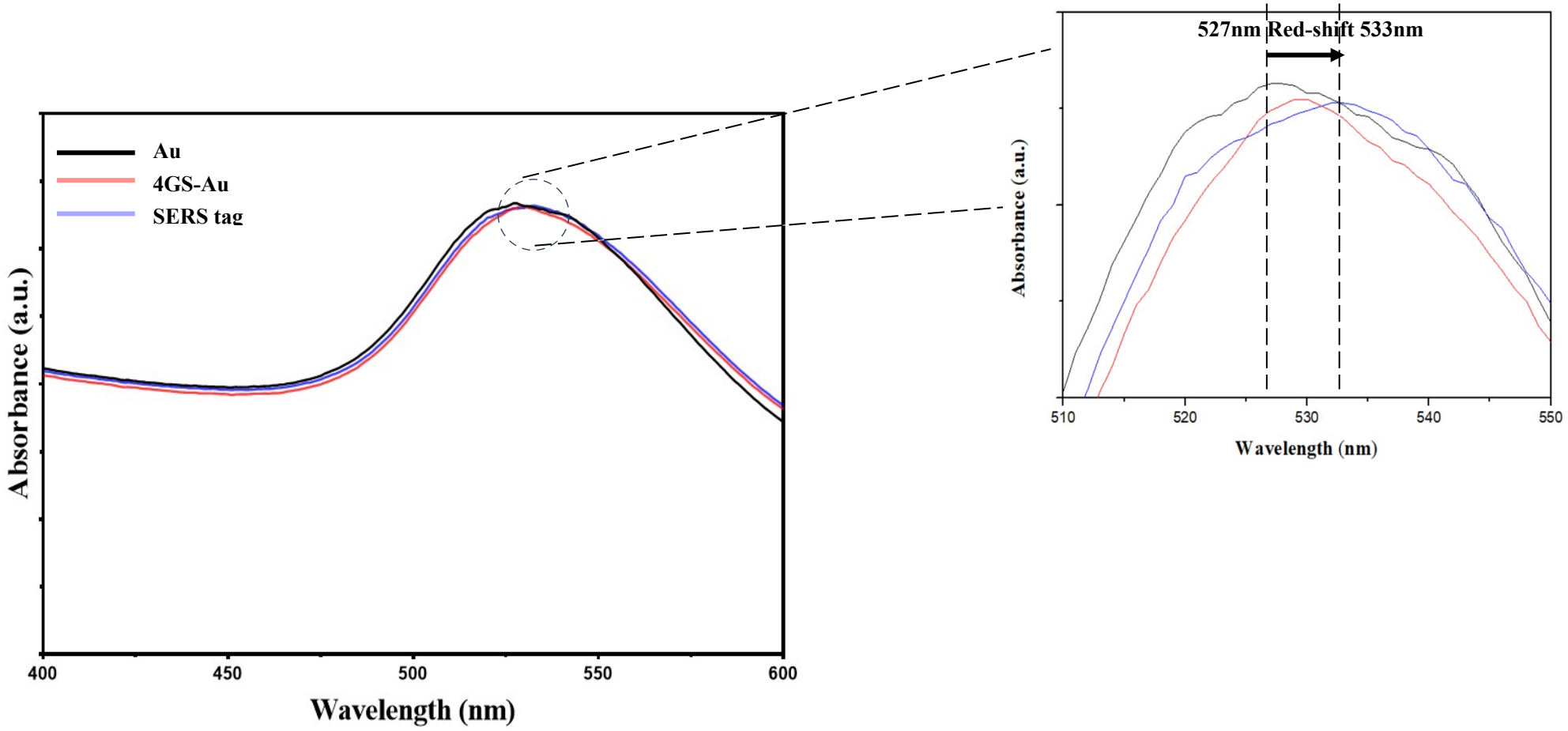


Fig. S5 UV-Vis spectra of AuNPs (black), 4GS@AuNPs (red) and immuno-AuNPs (blue). The enlarged spectra show a 6nm red shift of SPR absorbance peak upon conjugation of 4GS and antibodies to the surface of AuNPs

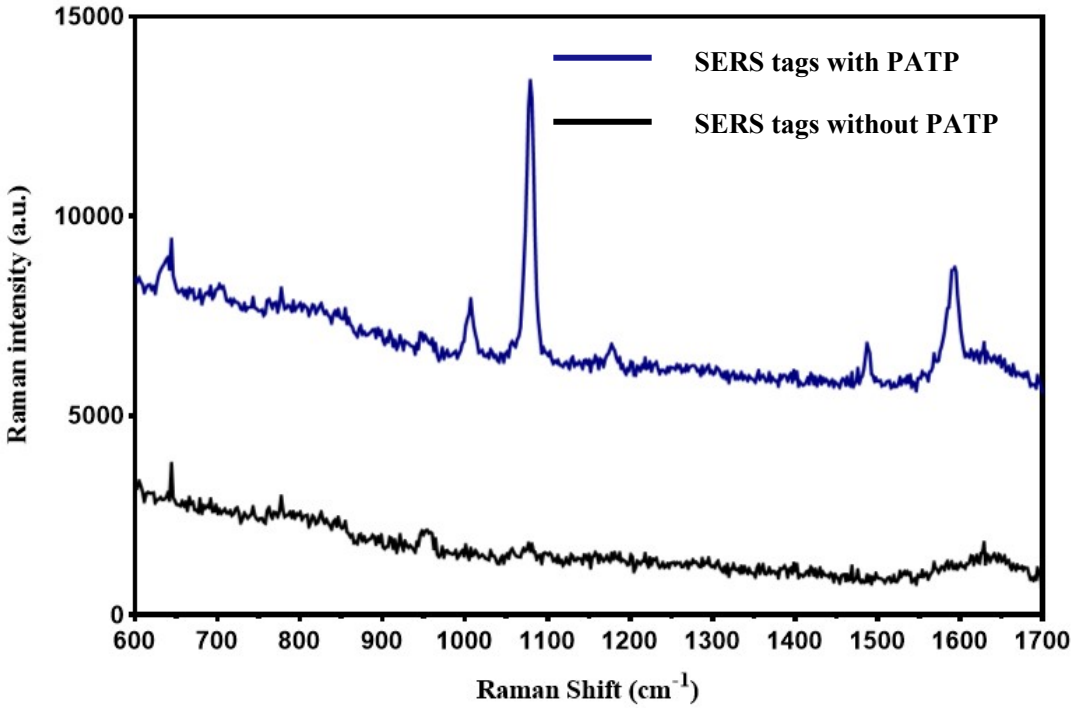


Fig. S6 Peak change of SERS label before and after adding PATP

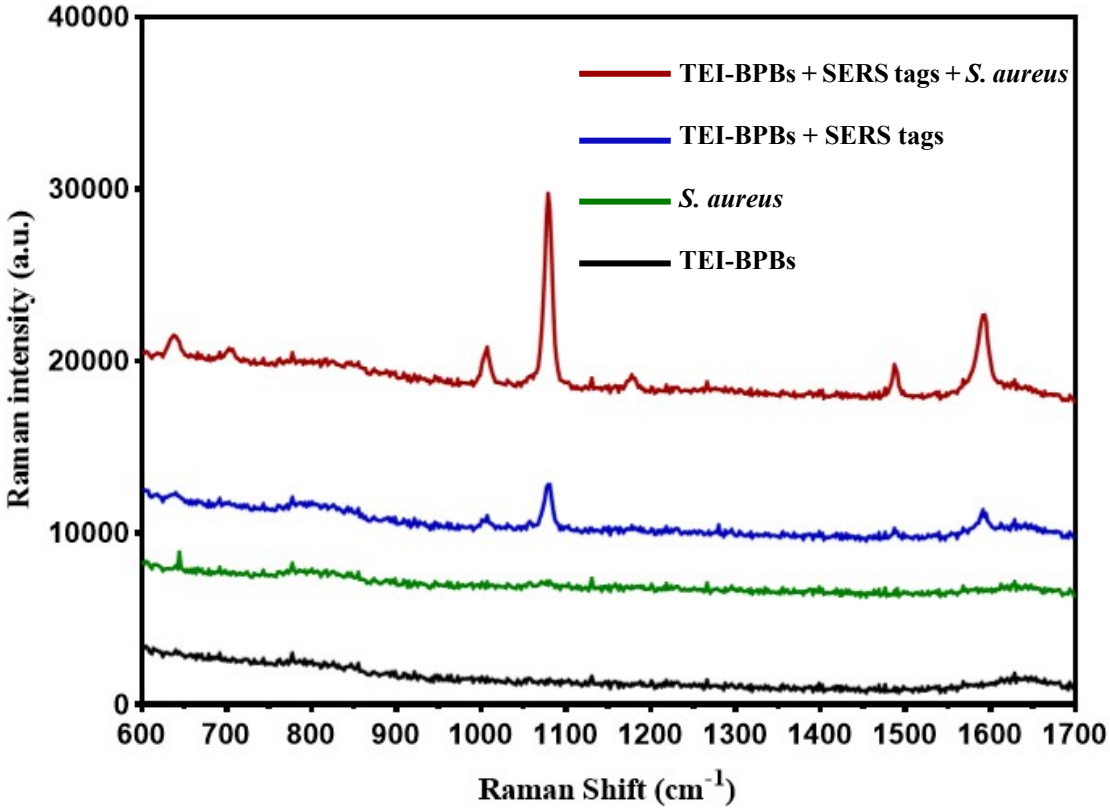


Fig. S7 SERS spectra of magnetic beads and SERS tags were captured in the absence and presence of *S. aureus*. The intensity of the SERS signal was significantly amplified when the sandwiched SERS tag was bound to the bacterial-magnetic bead complex

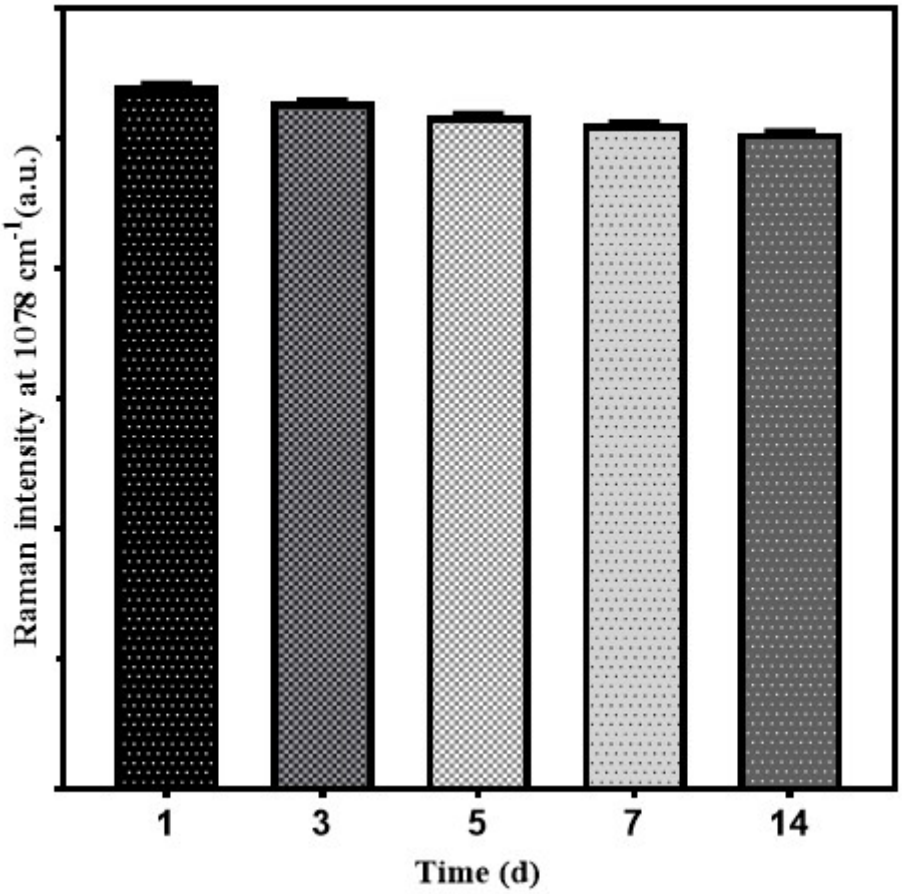


Fig. S8 Stability testing of SERS labels

Table S1 Bacterial strains used in this study.

Number	Bacteria strain	Source	Reference
1	*S. aureus NCTC8325*	(Novick 1967)	[1]
2	*E. coli O157:H7*	EDL933	[2]
3	*Listeria L. monocytogenes*	ATCC19111	
4	*Salmonella S. typhimurium*	CVCC541	[2]
5	*Shigella flexneri*	ATCC29903	
6	*Streptococcus mutans*	ATCC25175	

[1] R. Novick, Properties of a cryptic high-frequency transducing phage in Staphylococcus aureus, Virology 33(1) (1967) 155-66.
[2] X. Sun, Y. Wang, L. Zhang, S. Liu, M. Zhang, J. Wang, B. Ning, Y. Peng, J. He, Y. Hu, Z. Gao, CRISPR-Cas9 Triggered Two-Step Isothermal Amplification Method for E. coli O157:H7 Detection Based on a Metal-Organic Framework Platform, Analytical chemistry 92(4) (2020) 3032-3041.