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*
**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.

<table>
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<tr>
<th>Number</th>
<th>Bacteria strain</th>
<th>Source</th>
<th>Reference</th>
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<tr>
<td>1</td>
<td><em>S. aureus NCTC8325</em></td>
<td>(Novick 1967)</td>
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<td><em>E. coli O157:H7</em></td>
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<td><em>Streptococcus mutans</em></td>
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