

Raman based detection of *Staphylococcus aureus* utilizing single domain antibody coated nanoparticle labels and magnetic trapping

Supplementary Figures

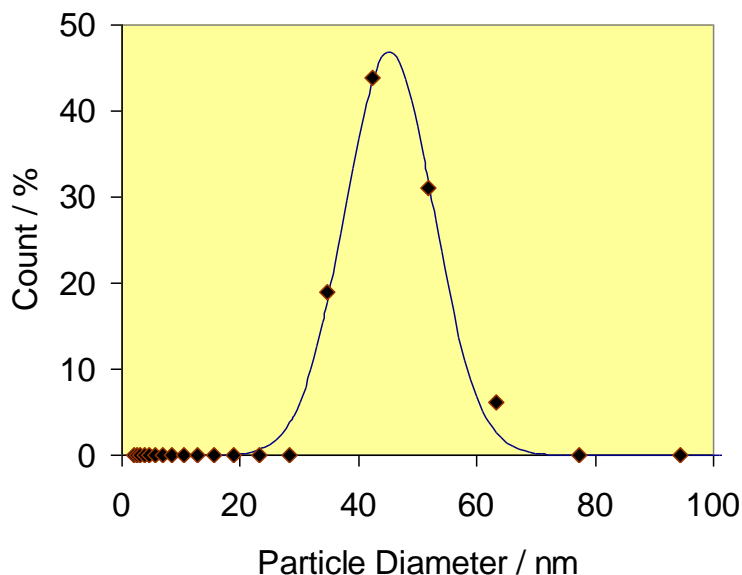


Fig. S1. Dynamic light scattering data (DLS) for the large MBA-AuNPs as synthesized.

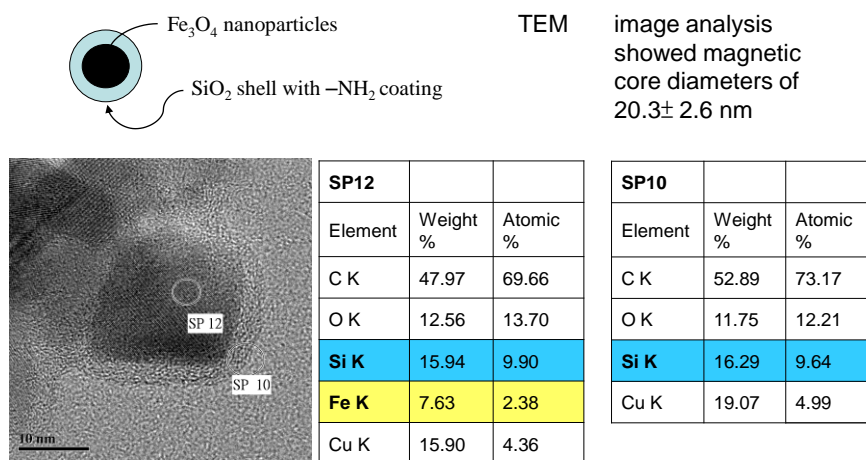


Fig. S2. TEM and EDX data for the IONP used prior to sdAb conjugation.

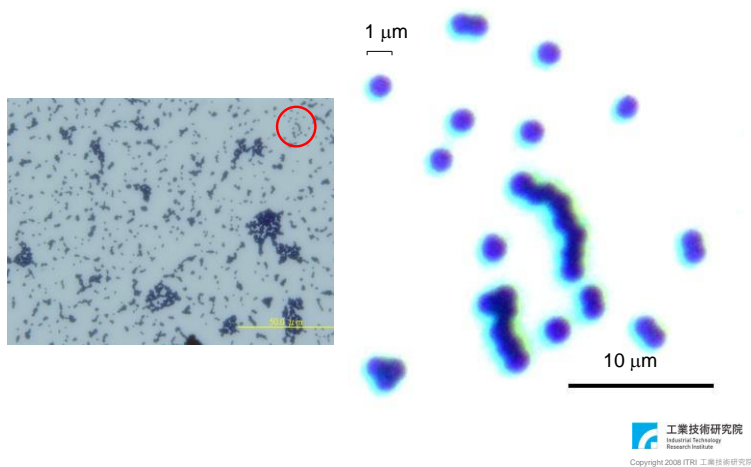


Fig. S3. Microscope images and Gram-stain results for *S. aureus* cultures.

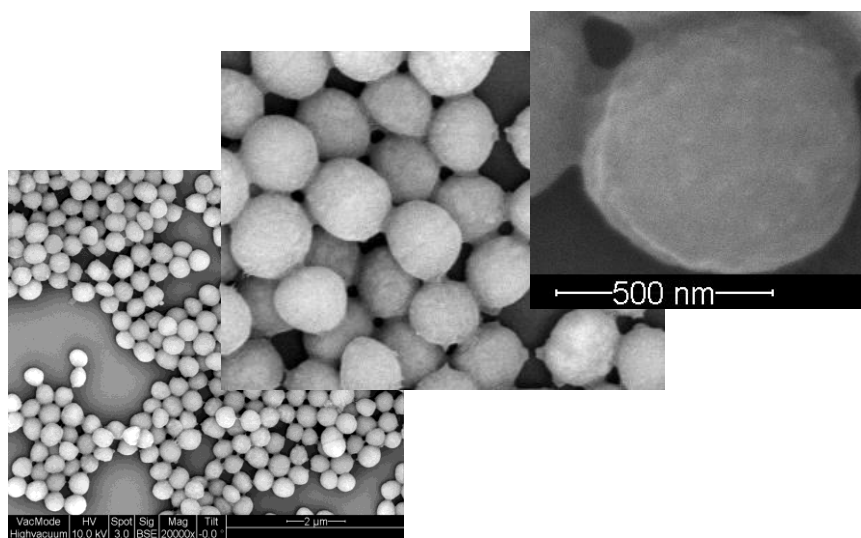
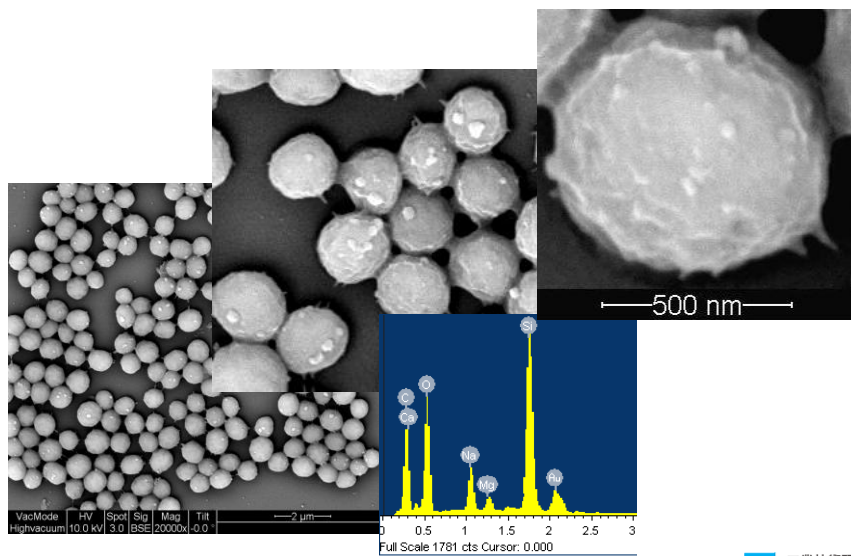


Fig. S4. SEM images of the cultured *S. aureus* showing the cocci shape and size.



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Fig. S5. EDX data and SEM images of *S. aureus* after NP binding and washing. The bright specks on the cocci are as expected for the AuNPs and the EDX results indicate the presence of Au.

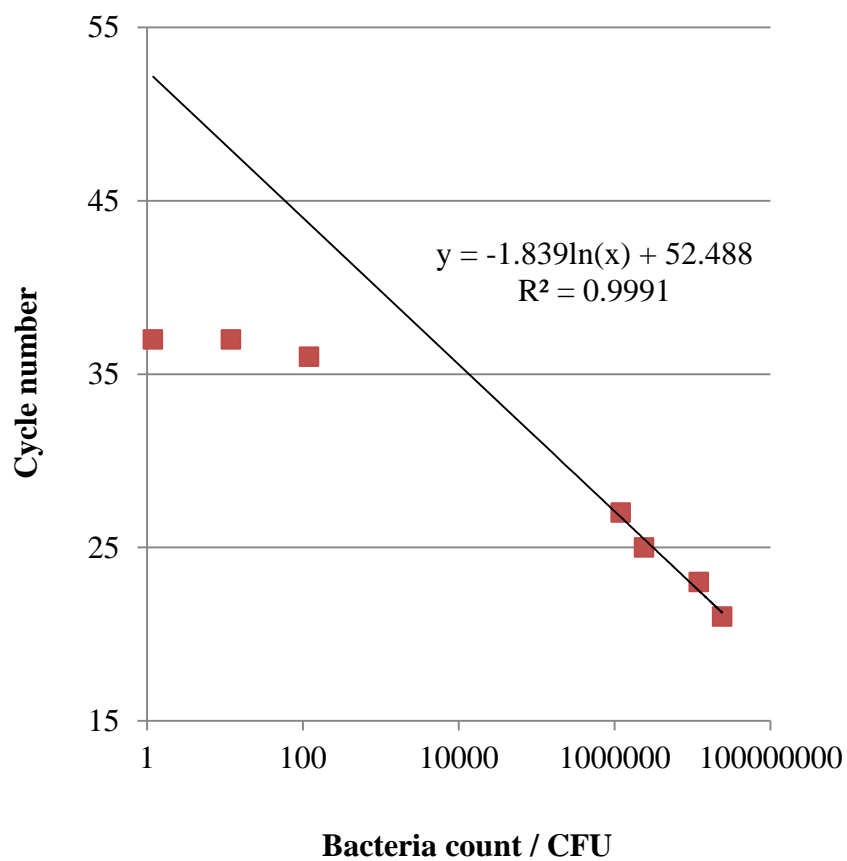


Fig. S6. Threshold plot for the PCR results from different *S. aureus* concentrations. The threshold value is the cycle number required for the fluorescence to increase by 25% of the initial background level. All the samples gave an increase in fluorescence after about 35 cycles but only the high concentration samples could be correlated with the amount of *S. aureus* cells present. For this reason, the detection limit for the PCR identification was estimated to be 10,000 cells.