Supporting Information

A Rapid Total Bacteria Count Method using Nanoparticle Conjugated with Aptamer for Water Quality

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Fig. S1 Stained PVDF filters (0.22 μ m pore size) with no bacteria, with *E. coli* at a concentration 10⁷ CFU/mL, and 10⁸ CFU/mL by using crystal violet dye that commonly binds bacterial peptidoglycan. Non-specific staining is observed on the filter with no bacteria. Addition of surfactant CTAB at 6 mg/mL did not reduce the non-specific staining of the membrane.



Fig. S2 TEM EDX of (a) AuNPs, (b) GSII-AuNPs, and (c) AB2-AuNPs



Fig. S3 Absorbance spectra of (a) AuNPs, (b) GSII-AuNPs, and (c) AB2-AuNPs at pH 1-14.



Fig. S4 SEM images of (a) 0.22 μ m pore size PVDF membrane without bacteria, (b) PVDF membrane with captured *E. coli*, where PVDF pores appear more crowded with bacteria cells, (c) centrifuged *E. coli* on silicon wafer before and (d) after AB2-AuNPs binding. The latter shows a rougher texture on the surface of *E. coli*.