

Supplementary Information

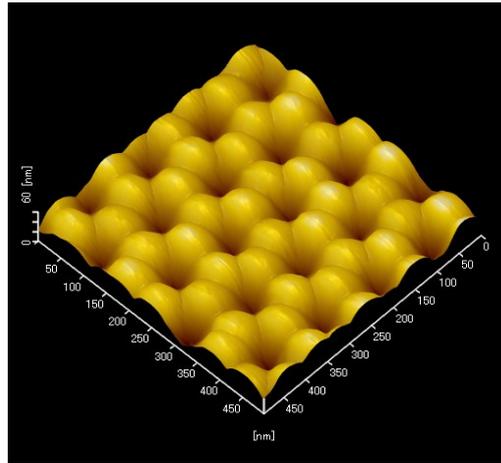
**Controllable gold-capped nanoporous anodic alumina chip for
label-free, specific detection of bacterial cells**

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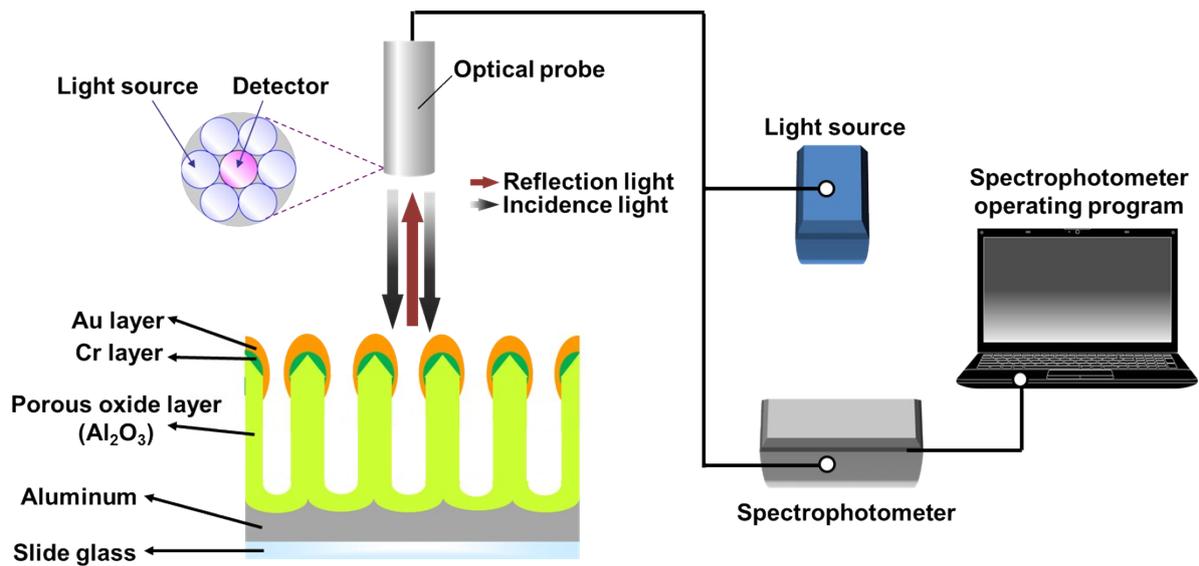
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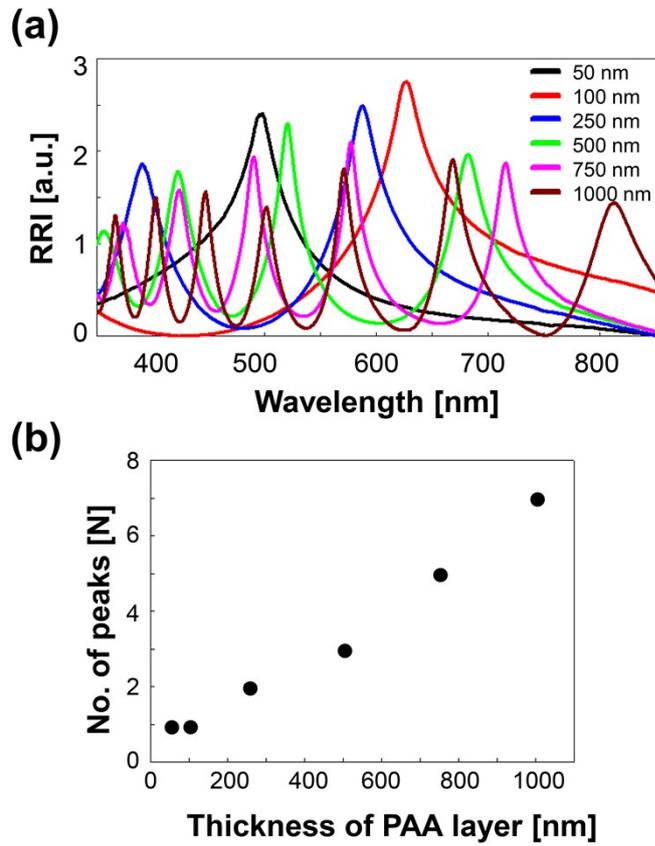
[†]These authors contributed equally in this study.



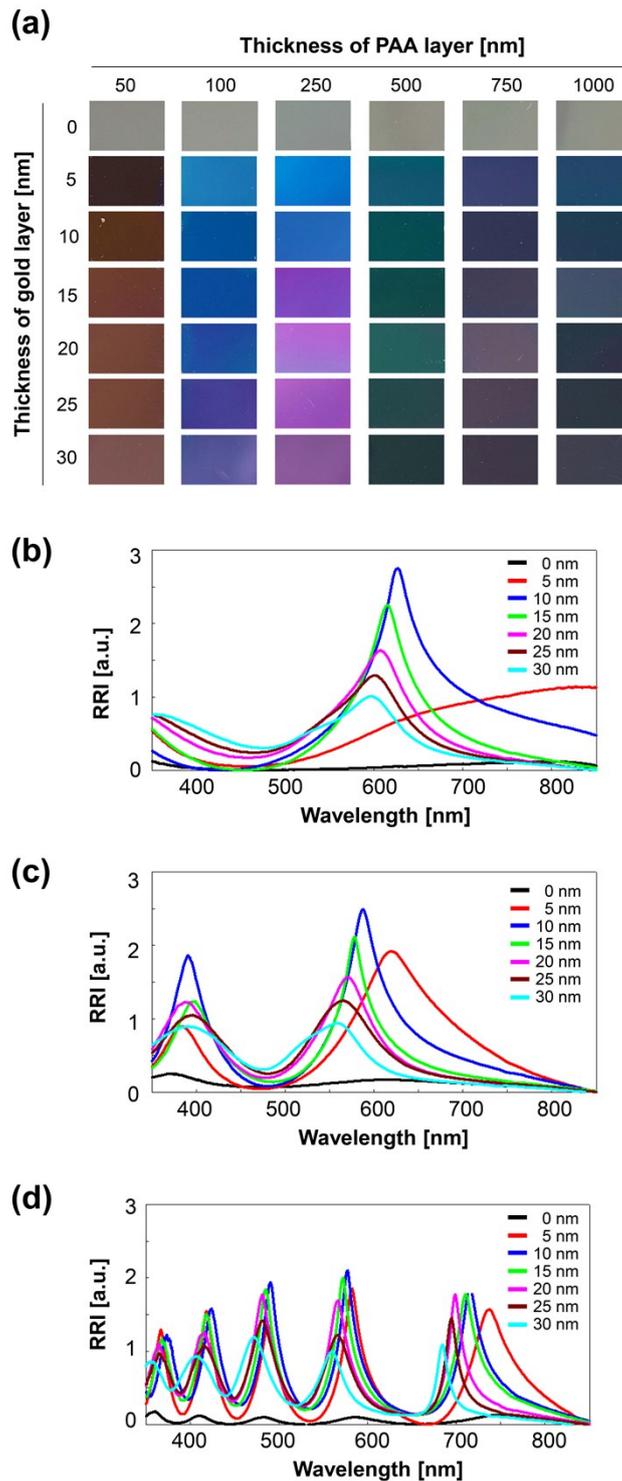
Supplementary Fig. S1. AFM analysis of gold-capped PAA chip.



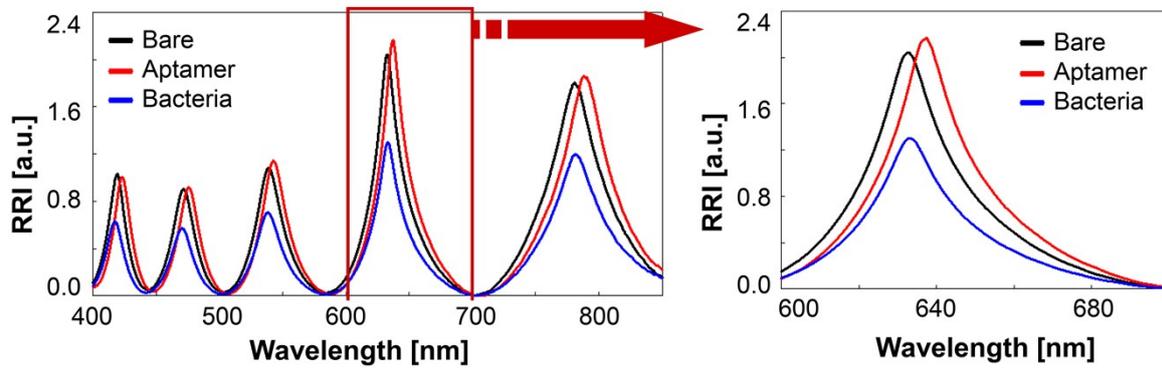
Supplementary Fig. S2. Experimental setup for the detection of biomolecules using gold-capped PAA chip.



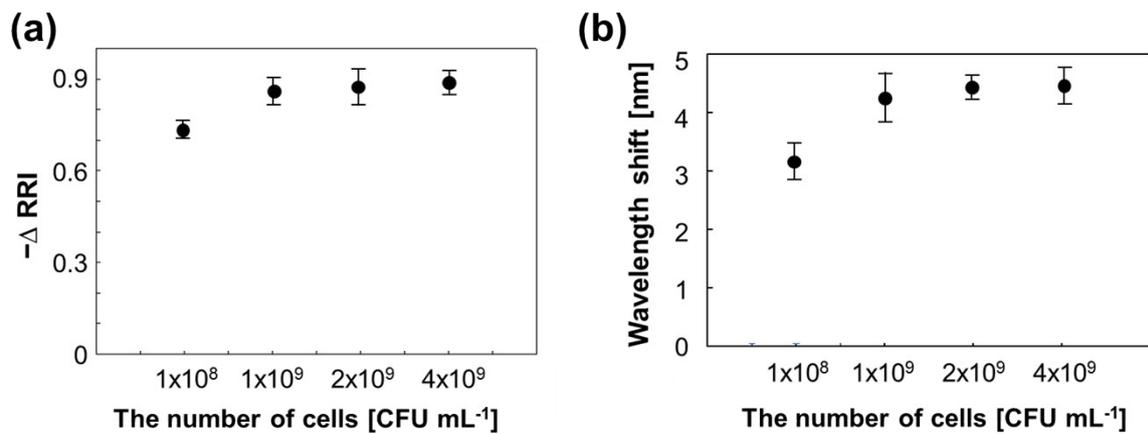
Supplementary Fig. S3. Optical responses of the chip surfaces prepared with various PAA layer thicknesses. (a) Optical responses of the chips with various PAA layer thicknesses in the range 50 to 1000 nm. The gold layer is 10 nm thick. (b) A plot of the number of fringes for various PAA layer thicknesses.



Supplementary Fig. S4. Optical responses of chip surfaces prepared with various PAA and gold layer thicknesses. (a) Optical images of the surfaces of the chips with various PAA layer thicknesses (50 to 1000 nm) and gold layer thicknesses (0 to 30 nm). The RRI spectra of surfaces with various gold layer thicknesses in chips with PAA layer thicknesses of (b) 100 nm, (c) 250 nm, and (d) 750 nm. For each chip with a different PAA layer thickness (b-d), the thickness of the gold layer was varied in the range 0 to 30 nm.



Supplementary Fig. S5. The overlaid spectra after sequentially incubating aptamers and bacterial cells on the chips.



Supplementary Fig. S6. Plot of the variation in the optical responses with various cell concentrations 1×10^8 to 4×10^9 CFU mL⁻¹ of *P. aeruginosa*. (a) Plot of the variation in the RRI. (b) Plot of the variation in the wavelength shift. These data were obtained from three measurements; the error bars are the standard deviations.