Supporting Information

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SI Methods

Bacterial Cell Preparation and Capture Studies. All bacterial work was performed in a sterilized hood. UV- *Escheria coli* K12 cells were cultured in brain heart infusion (BHI) broth at 37 °C for 12 h (2% inoculum) and streaked onto a BHI agar plate. After culturing (12 h, 37 °C) two colonies were used to inoculate Luria-Bertani (LB) Broth, Miller (Aldrich) and incubated at 37 °C for 12 h. Visible absorption measurements at 600 nm were used to establish that the cultures reached the stationary phase of growth within 12 h. This cell suspension was used to inoculate a second LB Broth, Miller (2% inoculum) and again incubated for 12 h. To facilitate fluorescence imaging, the cells were dyed with the fluorescent nucleic acid dye SYTO 13 (Invitrogen) at 37 °C for 1 h. The cells were rinsed four times by centrifuging at 17,700 × *g* for 2 min to pelletize the cells, removing the supernatant, and then resuspending in 0.01 M PBS. The resulting suspension was diluted in 0.01 M PBS to yield the capture assay (CA) solution, consisting of a suspension of $\sim 5 \times 10^7$ cfu/mL fluorescently labeled *E. coli* cells in PBS buffer. The actual cell concentration in the CA solution was determined using three successive 10-fold dilutions from the final concentration, streaking onto BHI agar plates, incubating for 18 h at 37 °C, and counting the colonies to calculate the original cell concentration (in cfu/mL) in the CA solution. Capture studies were performed by immersing the antibody-modified diamond and glass surfaces in CA solution and incubating at 37 °C for 1 h with gentle shaking. The surfaces were then rinsed three times (5 min each) with 0.01 M PBS. The number of cells per unit area was then measured using fluorescence microscopy. At least nine regions, each with an area of 0.45 mm^2. were manually counted with the aid of Image J software, and the average density of cells was determined.