

Electronic Supplementary Information

Site-specific immobilization of microbes using carbon nanotubes and dielectrophoretic force for microfluidic applications

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Cell viability assay

A live/dead assay was conducted to confirm the viability of the immobilized cell after the immobilization process. L7007 LIVE/DEAD BacLight Bacterial Viability Kit (Molecular Probes) was used for the live/dead assay. This kit utilize mixture of the SYTO 9 and propidium iodide. Thus, bacteria with intact cell membranes are stained fluorescent green, whereas bacteria with damaged membranes are stained fluorescent red. Fig. S1 shows the results of the assay. Almost all cells were stained in green and only one cell was stained in red (fig. R1c). This result means that our immobilization method for microbes does not affect the viability of the cells.

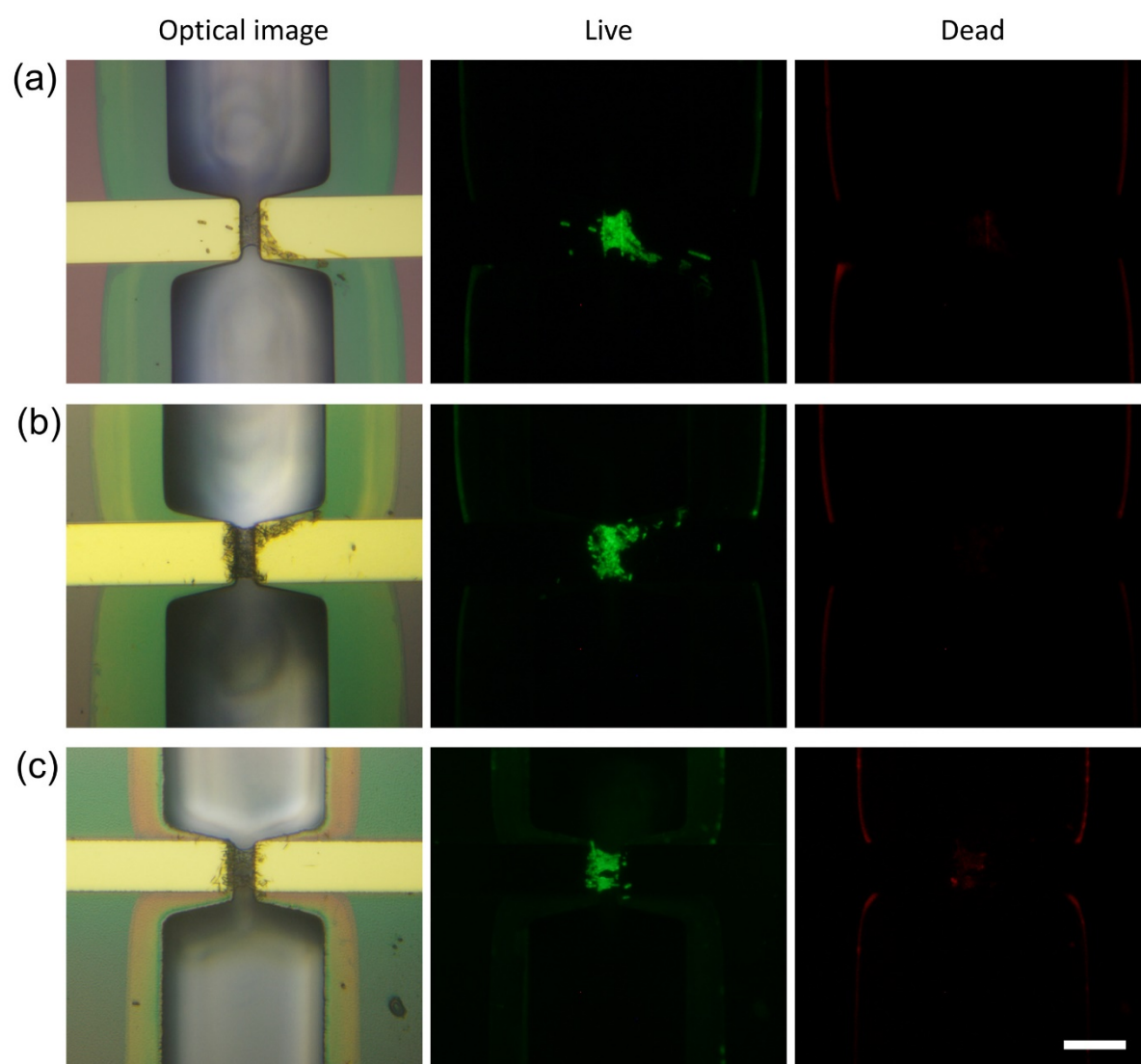


Fig. S1 Optical and fluorescence image of *E. coli*-attached SWNT film. (a) An AC voltage with an amplitude of 6 V_{pp} and a frequency of 1 MHz was applied between the two electrodes (gap size of 5 μm), across the mixed SWNT/*E. coli* suspension (*E. coli* density of OD₆₀₀ = 1.6), for 2 s. (b) An AC voltage with an amplitude of 10

V_{pp} and a frequency of 1 MHz was applied between the two electrodes (gap size of 5 μm), across the mixed SWNT/*E. coli* suspension (*E. coli* density of $\text{OD}_{600} = 0.4$), for 0.3 s. (c) An AC voltage with an amplitude of 10 V_{pp} and a frequency of 1 MHz was applied between the two electrodes (gap size of 7 μm), across the mixed SWNT/*E. coli* suspension (*E. coli* density of $\text{OD}_{600} = 0.4$), for 2 s (scale bar: 20 μm).