Supplementary Material (ESI) for Lab on a Chip

Supplementary Data

Air-Stable Supported Membranes for Single Cell Cytometry on PDMS Microchips

K. Scott Phillips, Kyung Mo Kang, Louise Licata and Nancy L. Allbritton

EXPERIMENTAL

Methods:

Separations. For all separations, sample was loaded across the separation channel by applying 500 V at the analyte waste reservoir and 0 V on the other channels. Then 1000 V was applied to the buffer waste reservoir while 500 V was applied to the analyte waste reservoir and analyte reservoir and 0 V to the buffer reservoir. A typical electrokinetic loading volume was 26 pL. For all separations reported, the field strength was -235 V/cm and the distance from injection to detection was 2mm. For single cell cytometry separations, the distance from injection to detection was 5mm and the field strength was 429 V/cm.

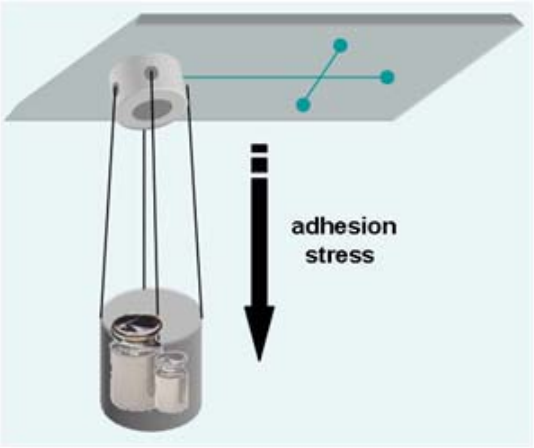

Figure S1. Schematic showing the method utilized to measure the adhesion strength of silicon tubing attached to PDMS. The chip was held in an inverted position with a weight bucket hanging from the tubing on the chip. Weights were added to the bucket until the tubing detached from the surface of the PDMS chip.

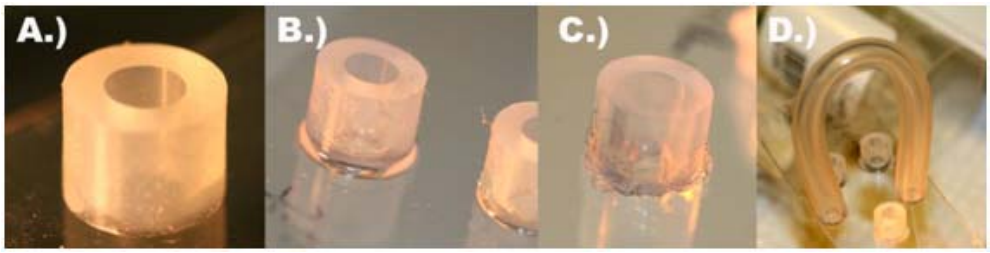

Figure S2. Images of tubing attached to a PDMS chip by (a) oxidization of the tubing and PDMS surfaces, (b) 2-part PDMS (Sylgard 184), and (c) 1-part PDMS (RTV108). (d) Loop of tubing bonded at both termini to a PDMS chip using plasma-based oxidation to demonstrate the adhesion strength of the method.

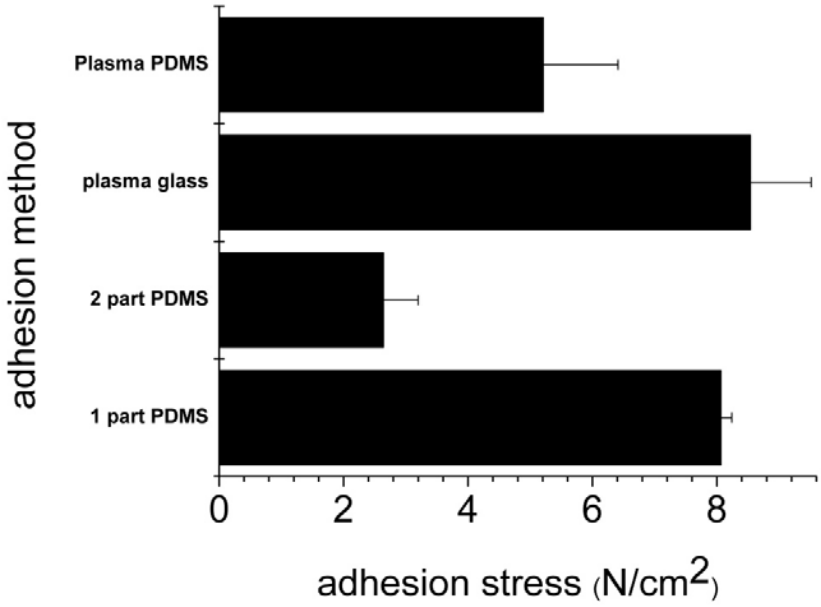

Figure S3. Adhesion strength of silicon tubing attached to PDMS by different bonding methods. The amount of force per unit area (stress) to detach the tubing from the underlying PDMS surface is plotted on the x axis. Plasma PDMS is plasma to connect tubing to PDMS, plasma glass is plasma to connect tubing to glass, 2-part PDMS is 2-part PDMS to connect tubing to PDMS and 1-part PDMS is 1-part PDMS to connect tubing to PDMS.