Supplementary Material

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Supplementary Figure 1: Flow distance versus time for three experimental runs. The experimental data is shown in red and the values calculated using the flow rate constant, *a*, in blue. Only experimental data after the flows reached quasi-steady state conditions was used to obtain *a*. An experimental value was recorded every second, but only a few data points are shown in these plots for clarity. The R² value of every fit exceeded 0.9985. The curves correspond to the following channels: (a) PTFE, depth 10 µm and width 10 µm (b) PTFE, depth 20 µm and width 30 µm (c) Silicon, depth 5 µm and width 10 µm.



Supplementary Figure 2: Numerical simulation of meniscus profiles using Surface evolver. a) Optical image of PDMS flow in PTFE coated microchannels with a depth of 10 μ m and widths ranging from 10 μ m to 50 μ m. b) Isometric view of the flow profile generated using the Surface evolver code. c) Simulated meniscus profiles for spontaneous capillary flow of PDMS in microchannels with the same aspect ratios as those in (a).