

Supplementary Methods

Using photolithography, we patterned the master with two layers of the negative photoresist, SU-8 (Microchem), containing the microgrooves and compartments. A UV aligner exposed a layer of SU-8 5 (3 μm thick) through a 20,000 dpi high-resolution transparency mask (CAD/Art Services), containing the pattern of microgrooves (10 μm wide, spaced 60 μm apart). After developing, we exposed a second layer of SU-8 50 (100 μm thick) through a mask containing the pattern of compartments. After developing, we placed the wafer in a clean Petri dish and treated it with (tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane for 20 min to facilitate release of the solid PDMS from the master. Several review papers describe the details of fabrication of PDMS-based microfluidic devices.¹⁻³

1. McDonald, J. C. et al. Fabrication of microfluidic systems in poly(dimethylsiloxane). *Electrophoresis* **21**, 27-40 (2000).
2. Whitesides, G. M., Ostuni, E., Takayama, S., Jiang, X. & Ingber, D. E. Soft lithography in biology and biochemistry. *Annu Rev Biomed Eng* **3**, 335-73 (2001).
3. Sia, S. K. & Whitesides, G. M. Microfluidic devices fabricated in poly(dimethylsiloxane) for biological studies. *Electrophoresis* **24**, 3563-76 (2003).