

Electronic supplementary Information

A Microdroplet-based Shift Register

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Device fabrication

Polydimethylsiloxane (PDMS) (Sylgard 184 Silicone Elastomer, Dow Corning) and glass substrates were used for the fabrication of the devices. Microchannels were fabricated in PDMS using standard soft lithography techniques. In order to create a silicon master, AZ4562 positive photoresist (Origine) was spin coated onto a silicon wafer at 4000 rpm for 30 s. After baking the substrate for 1 min at 90 °C, the resist was exposed through a photomask to UV light for 16 s and was developed in a 1:4 ratio of AZ400K developer:water solution. The silicon wafer was subsequently dry etched, achieving 40 µm deep patterns onto the master. To prevent PDMS adhesion to the master, the wafer was silanised using 1H-1H-2H-2H-perfluorooctyltrichlorosilane (Fluka) overnight. PDMS was then cast onto the silicon master at a 10:1 ratio of polymer to curing agent. The mixture was degassed in a desiccator chamber for 1 hour and cured at 70 °C overnight. The devices were then cut from the mold and punched with a sharpened flat needle to create inlet and outlet ports.