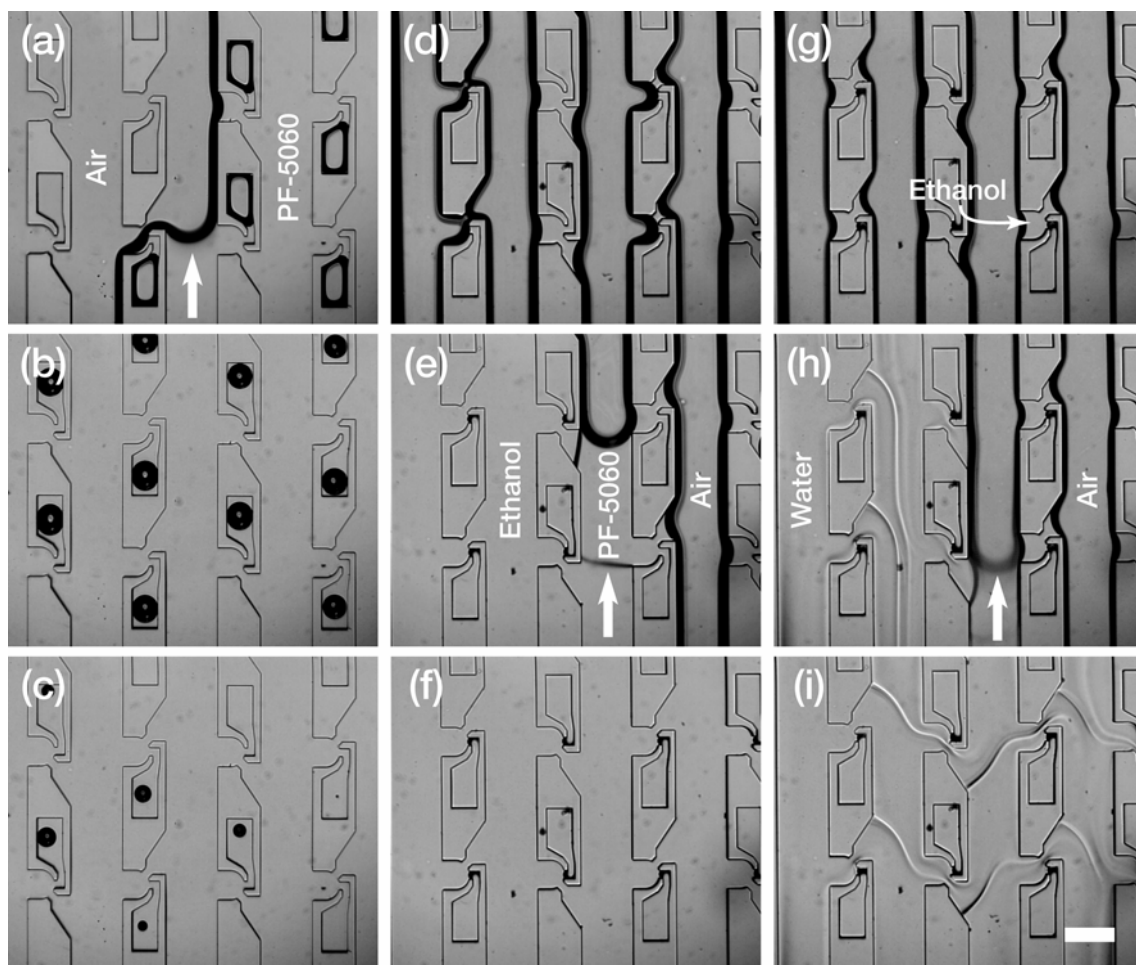


Supplementary Fig. 1 Sequence of high speed camera images showing indirect retrieval mechanism using bubble powered jet: (a) Laser on, (b) bubble formed, (c) water displaced by the expanding bubble started to displace the bead out of the trap after about 400 ms, (d)-(e) the bead was completely displaced into the main flow, and (f) bubble shrank when the laser was switched off. The average velocity in the main channel was $\sim 470 \mu\text{m/s}$. Laser power and duration were set at 0.7 W and 1500 ms, respectively.



Supplementary Fig. 2 Filling up of device 2: (a) PF-5060 was infused into the device from the outlet. (b) Air bubbles are trapped in the chambers. (c) Bubbles disappeared after a few minutes. (d) Device was centrifuged using spin-coater to remove excess PF-5060. (e)-(f) Ethanol was introduced into the device from the inlet to displace the small amount of PF-5060 still left in the traps. (g)-(i) Next, water was introduced into the device. Air bubble trapped before the water displaced bulk of the ethanol out of the device before the water entered the device to remove the leftover ethanol. Scale bar represents 200 μm .