Supplementary Material (ESI) for Lab on a Chip

Electronic Supplementary Information for

Asymmetric Electrowetting - Moving Droplets by a Square Wave

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This supplementary information including:

1. Video 1

   This video corresponds to the images in Fig. 5(a). A 40 Vp and 1 Hz square wave was applied on the asymmetric electrodes. Due to the asymmetric electrowetting start to occur, droplet oscillated slightly between two electrodes.

2. Video 2

   When voltage was increased to 90 Vp, the droplet was suffered from a sufficient contact angle difference caused by asymmetric electrowetting, and then started to be pumped continuously.

3. Video 3

   At 140 Vp, the asymmetric electrowetting entered the saturation region. The droplet motions of expansion and contraction occurred mostly, and droplet jump was observed sometimes.

4. Video 4

   This video corresponds to the images in Fig. 4(b). By applying higher frequency of square wave (~ 9Hz), the droplet would speed up to catch up the electric signal. As a result, the velocity of droplet can be up to 23.6 mm/s.

5. Fig. S1

   Sessile drop experiment for electrowetting study.

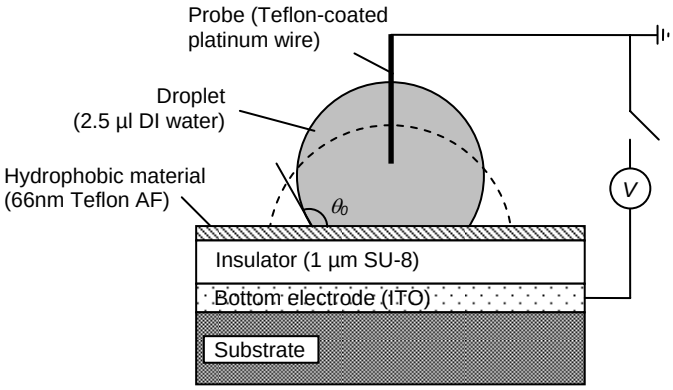

Fig. S1 Sessile drop experiment for electrowetting study.