Supplementary Material (ESI) for Lab on a Chip

Supporting Information of

Designed Pneumatic Valve Actuators for Controlled Droplet Breakup and Generation**

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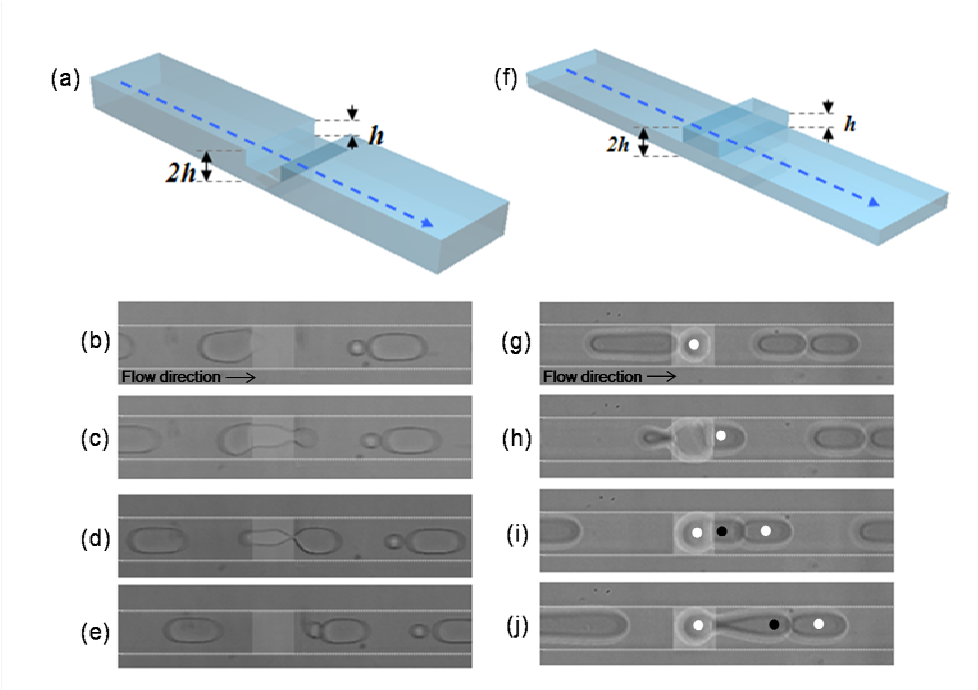

Fig. S1 (a) Schematic of a microchannel with the rectangular contriction at the top of the main channel of 20 μm in height. In the constriction area, the channel height is 10 μm. (b-e) Parallel white lines indicated fluidic channels (90 μm wide), and bright area indicates constricted rectangular part (90 × 90 × 10 μm). Time-lapse images of droplet breakup in the rectangular pit. Time intervals taken between images are 15 ms. (f) Schematic of a microchannel with a protruded rectangular part at the top of the main channel (10 μm high), in which droplets move in the direction of the arrows. (g-j) Parallel white lines indicated fluidic channels (90 μm wide), and bright area indicates protruded rectangular part (90 × 90 × 20 μm). Time-lapse images of droplet breakup in the rectangular protrusion. Time intervals taken between images are 30 ms. White and black dots indicate remaining and leaving droplets at the protruded part, respectively. 'h' is 10 μm.