Electronic Supplementary Material (ESI) for RSC Advances.

Rapid manufacture of modifiable 2.5-dimensional (2.5D) micro-structures for capillary-force-driven fluidic velocity control

Electronic Supplementary Material 4

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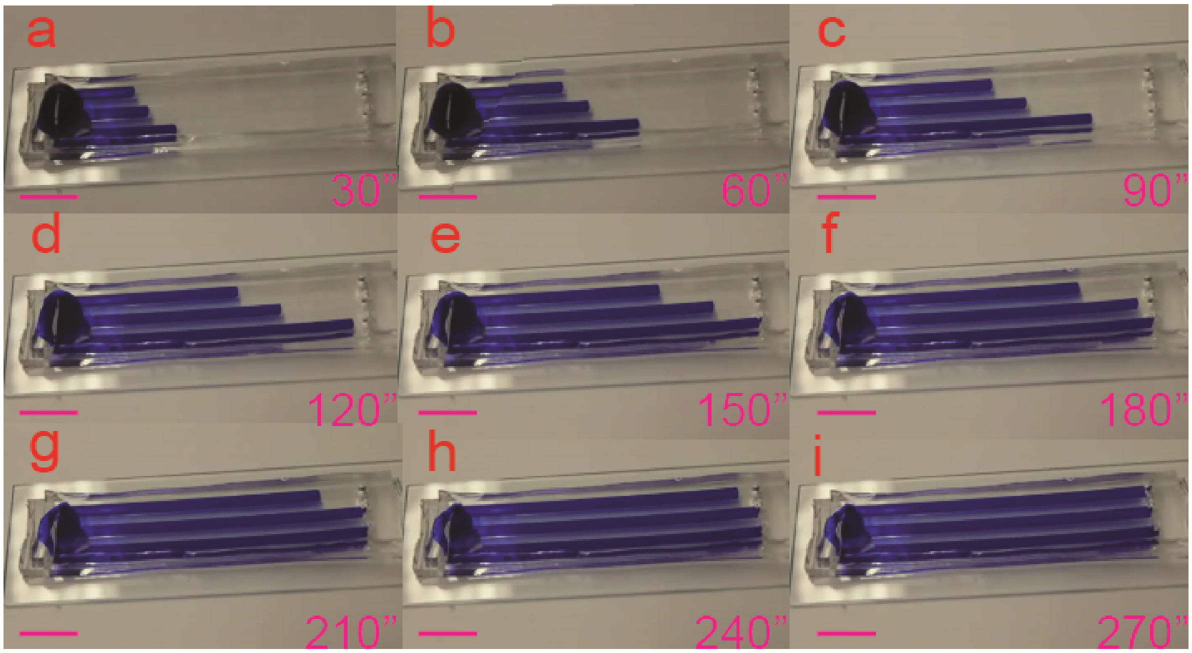

Fig. S1 Sequential capillary flow in the first 2.5D capillary flow microchip, with parallel multi-level channel height of 200 µm, 300 µm, and 400 µm from top down, channel length and width of 2 mm and 55 mm, respectively. a)–i) The real images of ink autonomously flowing inside the 2.5D chip, with a time internal of 30 s. Blue ink is used to display the velocity of the channel-height influenced programmable autonomous flow. Scale bars, 1 cm.

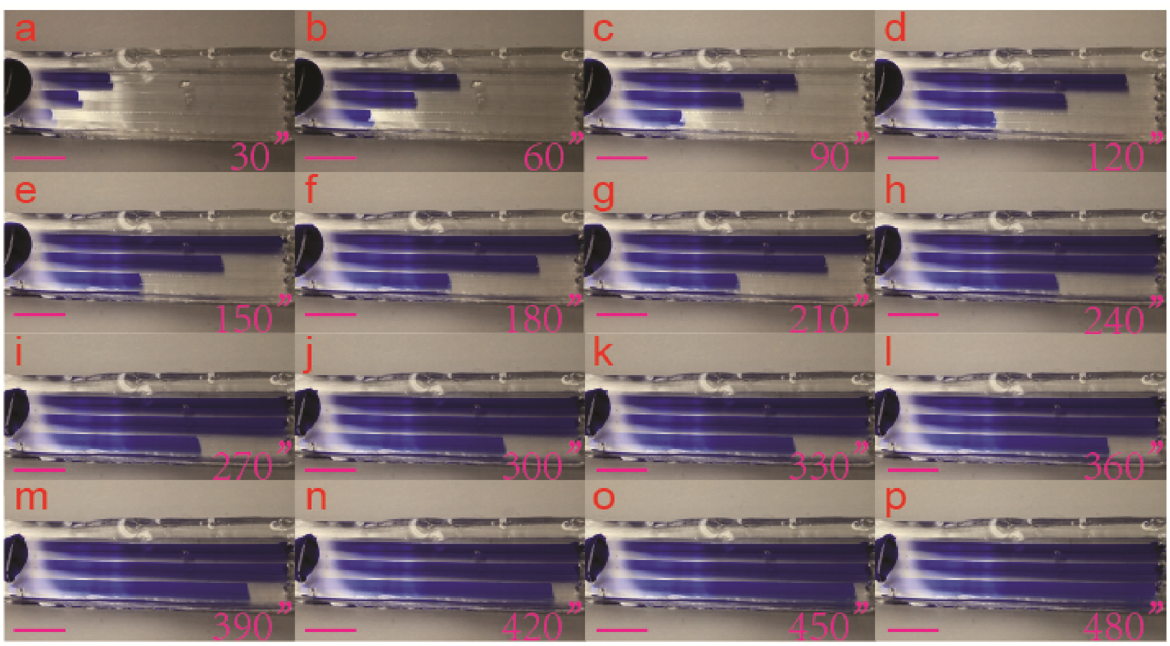

Fig. S2 Sequential capillary flow in the second 2.5D capillary flow microchip, with parallel multi-level channel height of 350 µm, 250 µm, and 100 µm from top down, channel length and width of 2 mm and 55 mm, respectively. a)–p) The real images of ink autonomously flowing inside the 2.5D chip, with a time internal of 30 s. Blue ink is used to display the velocity of the channel-height influenced programmable autonomous flow. Scale bars, 1 cm.

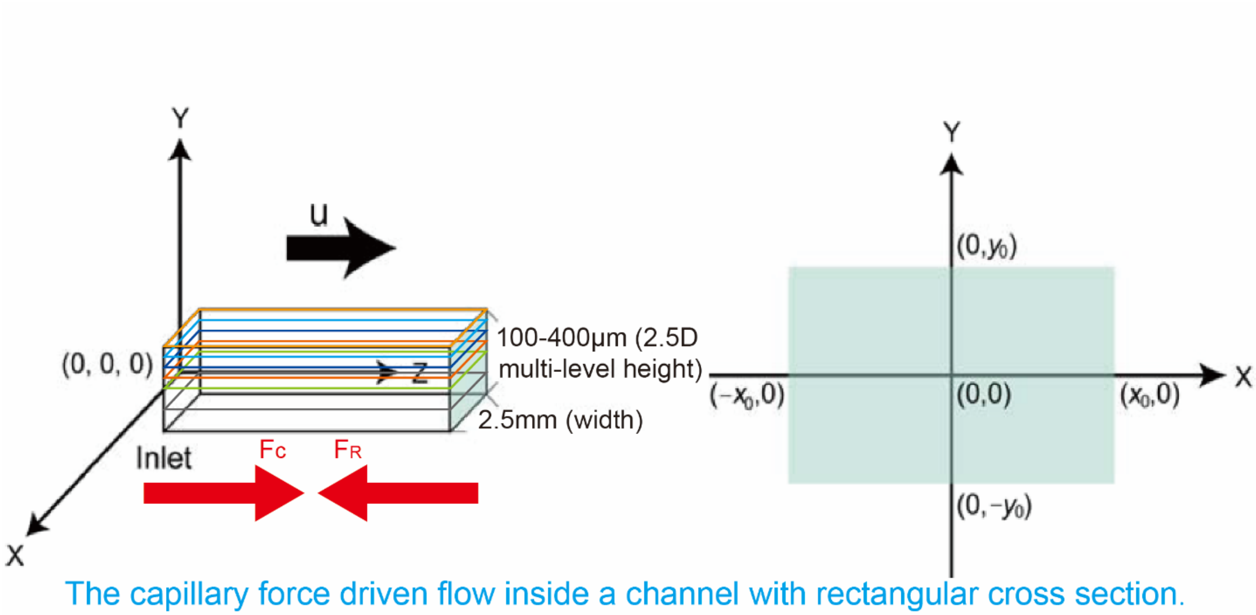

Fig. S3 Schematic illustration for capillary-force-driven flow in 2.5D microchip, with multi-level channel height of 100 µm (grey), 200 µm (green), 250 µm (henna), 300 µm (deep blue), 350 µm (light blue) and 400 µm (brown), respectively. Channel length and width are 2 mm and 55 mm.

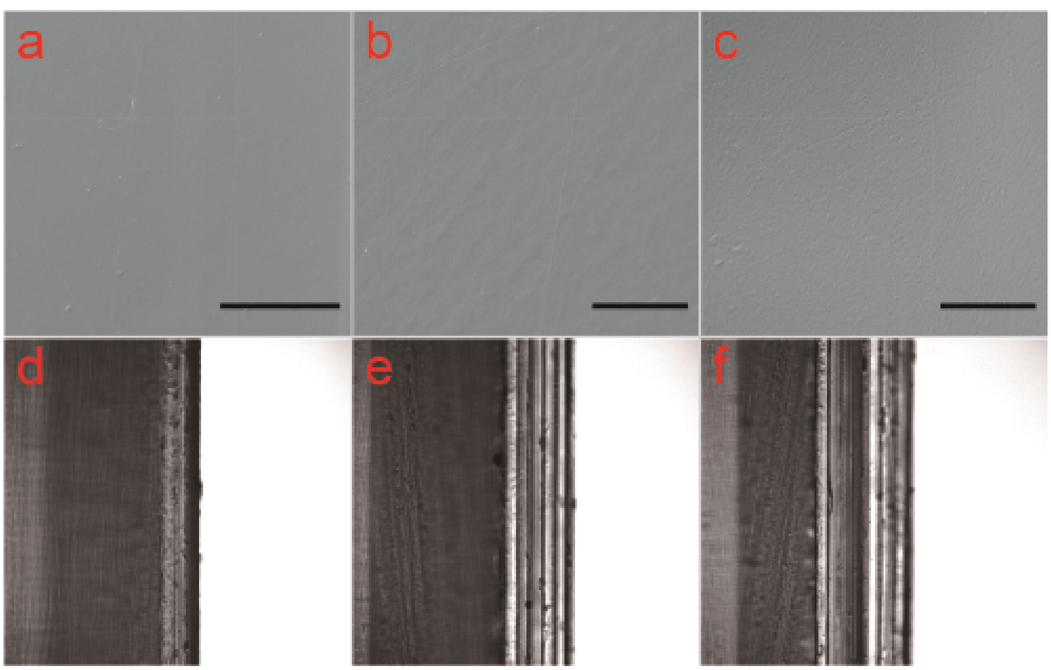

Fig. S4 The SEM and optical microscopic image of the tape master. a) The surface of the multilayer tape, with magnification of 200X. b) The surface of the multilayer tape, with magnification of 1600X. c) The surface of the multilayer tape, with magnification of 16000X. d)–f) The boundary image of three-, five-, and seven-layer tape channels from optical microscope, with magnification of 100X. The images in a)–c) are taken from the SEM, with rule bar of 200 µm in a); of 20 µm in b); and of 2 µm in c).