Using pattern homogenization of binary masks to fabricate microfluidic structures with 3D topography

Electronic Supplementary Information

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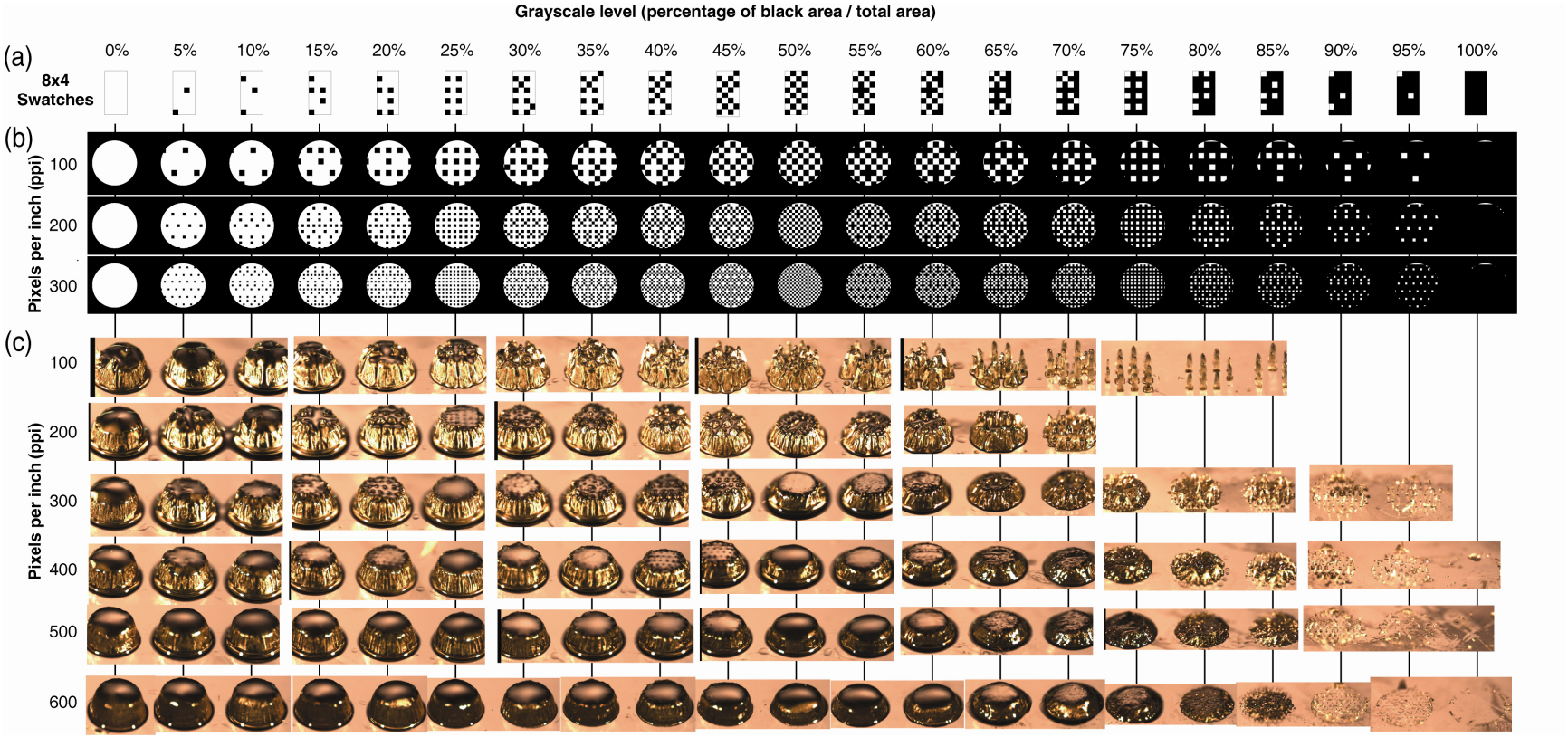

Fig. S1. Experiments conducted to determine homogeneous/discrete patterns and their relation with the size and number of transparent pixels. (a) First level swatches used to pattern 32 grayscale tonalities (8 x 4 pixel arrays). (b) Array of grayscale binary masks of 2 mm circles patterned with several grayscale tones (swatches shown in the previous panel) at different pixel size (pixels per inch-ppi). (c) Examples of thiolene polymerized patterns created with the masks shown in (b) and additional pixel sizes.

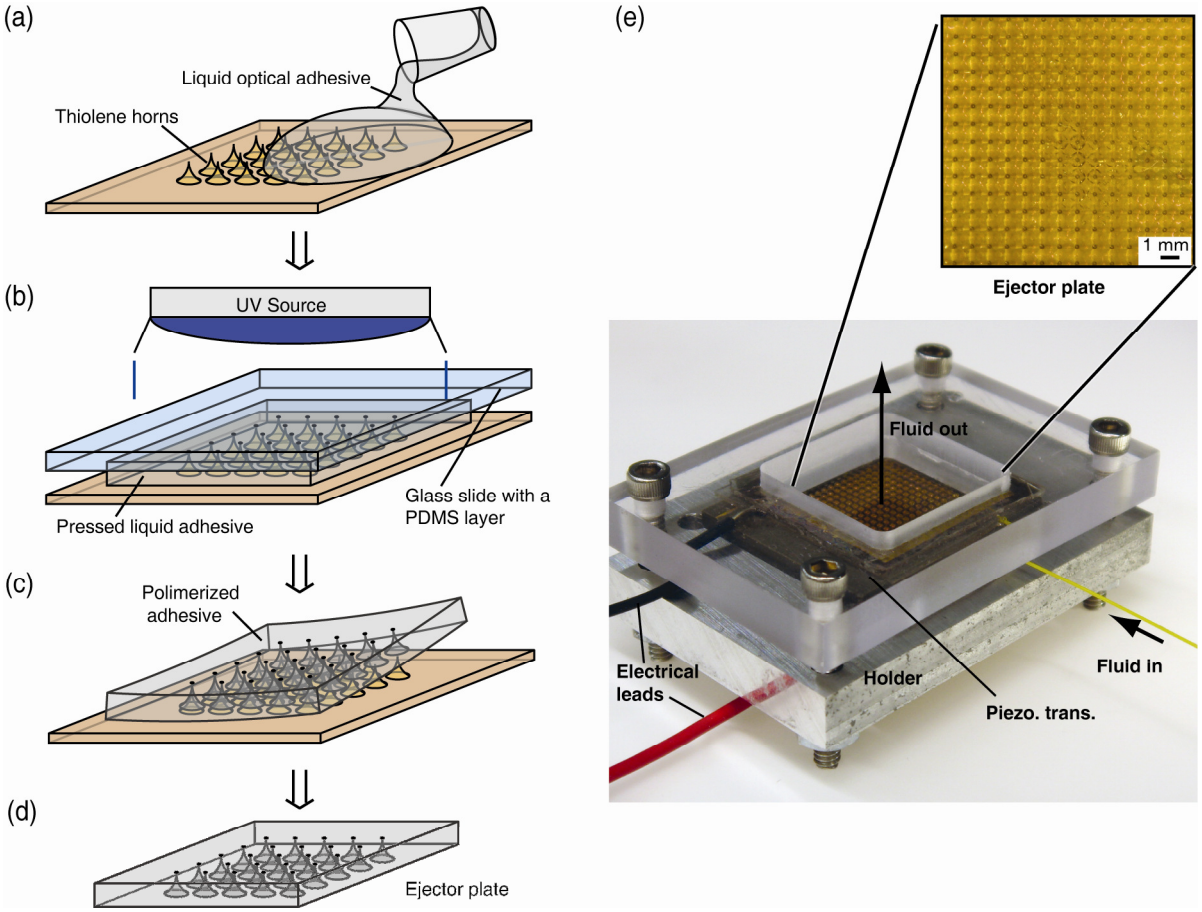

Fig. S2. Fabrication of the thiolene ejectors. (a) The thiolene-based adhesive is poured over the master. (b) A glass slide with a thick membrane of PDMS is pressed against the master and adhesive is exposed to a UV light. When both sides are pressed together the tips of the thiolene horns are inserted into the soft PDMS layer. This way the horn cavities created on one side of the sandwiched photopolymerized membrane end up in orifices that surface on the other side of the membrane. (c) The completed ejector plate is released from the master. (d)The thiolene membrane with the horn cavities connecting both sides is used as ejector plate. (e) Prototype of atomizer with a thiolene ejector made as a negative replica of the horn array.