

Photolithographic surface micromachining of polydimethylsiloxane (PDMS)

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Table S1 Summary of the geometrical factors of the PDMS microstructures.

Microfiltration membrane	Membrane thickness	Hole diameter	Hole c.t.c. distance
Fig. 3a left & Fig. S2a left	10 μm	20 μm	50 μm
Fig. 3a middle & Fig. S2a middle		20 μm	200 μm
Fig. 3a right & Fig. S2a right		8 μm	20 μm
Fig. 4a-e & Fig. S3a&b		4 μm	8 μm
Free-standing beam	Beam thickness	Minimum beam width	Beam length
Fig. 3b & Fig. S2b, left	500 nm	10 μm	800 μm
Fig. 3b & Fig. S2b, middle		5 μm	800 μm
Fig. 3b & Fig. S2b, right		5 μm	300 μm
Fig. 4f & Fig. S3c		2 μm	800 μm
Fig. 4g & Fig. S3e		10 μm	800 μm
Fig. 4h&i & Fig. S3d		5 μm	800 μm

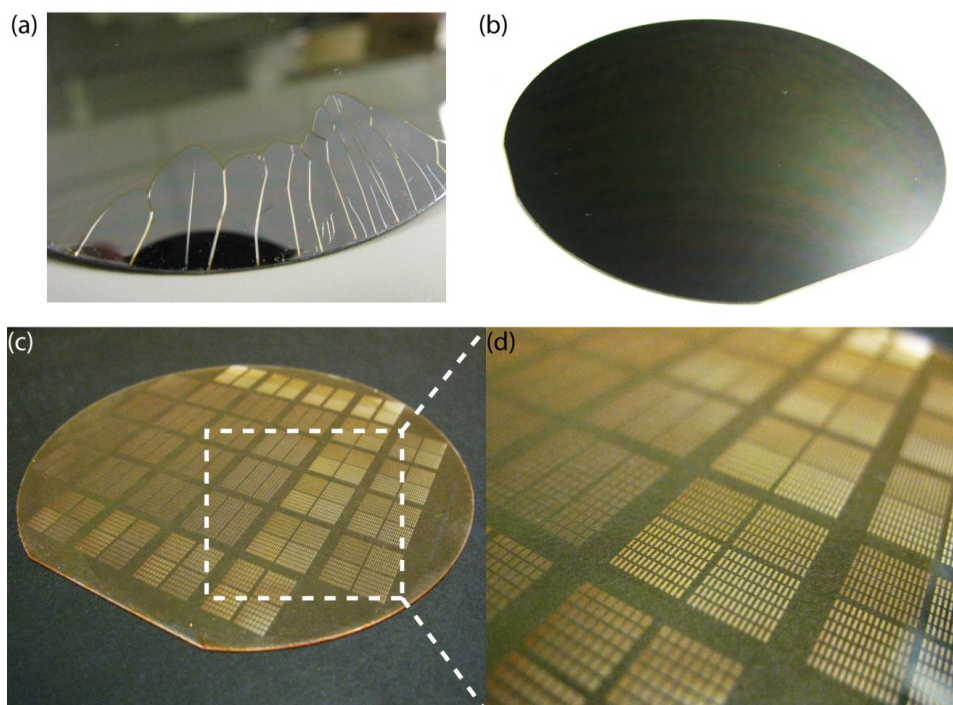


Fig. S1 (a-b) Images of photoresist spin-coated on the PDMS surface with (b) or without (a) the treatment of O₂ plasma. Photoresist could not be spread out uniformly on the PDMS surface without an O₂ plasma treatment (a), while after the O₂ plasma treatment (b), photoresist could be uniformly spin-coated on PDMS. In a&b, 4 inch Si or glass wafers were used as substrates. (c-d) Photolithographically patterned photoresist on the O₂ plasma treated PDMS. In c&d, 6 inch Si or glass wafers were used as substrates.

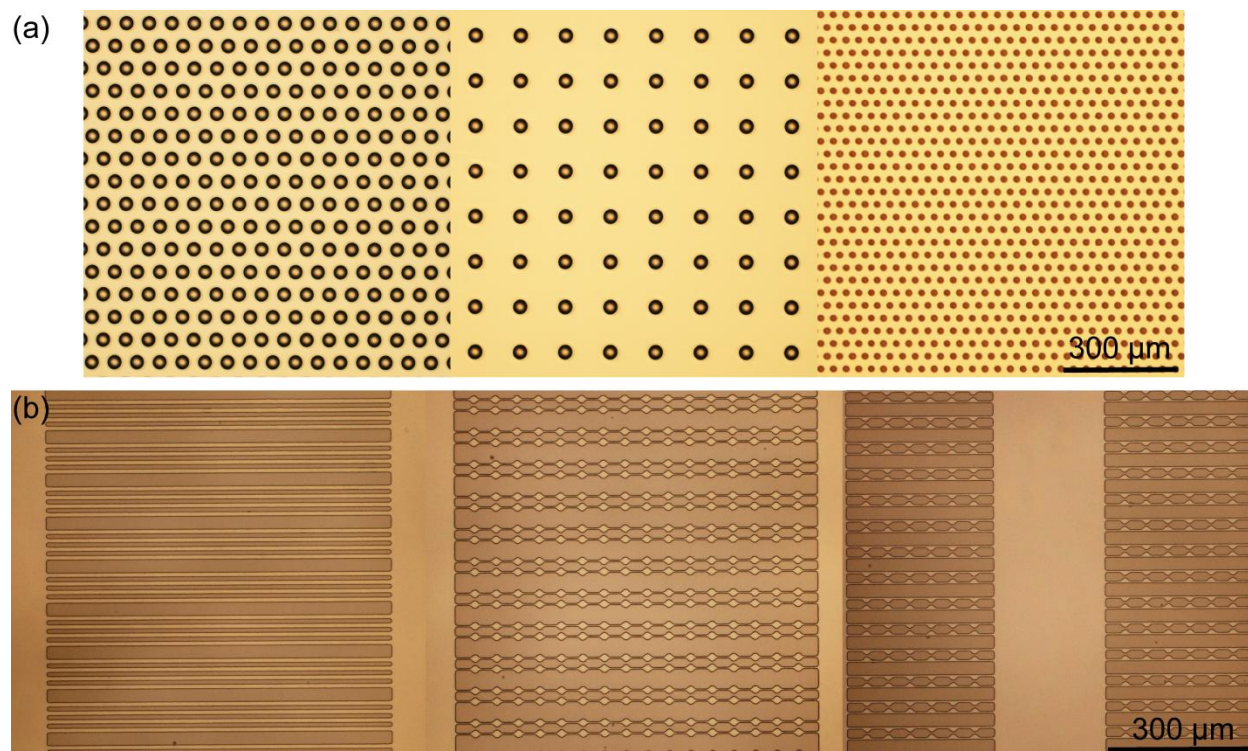


Fig. S2 Bright-field images of patterned PDMS layers on the Si substrates. (a) Arrays of through holes with the hole diameter of 20 μm (left and middle) or 8 μm (right). (b) Patterned PDMS strips on the Si substrates.

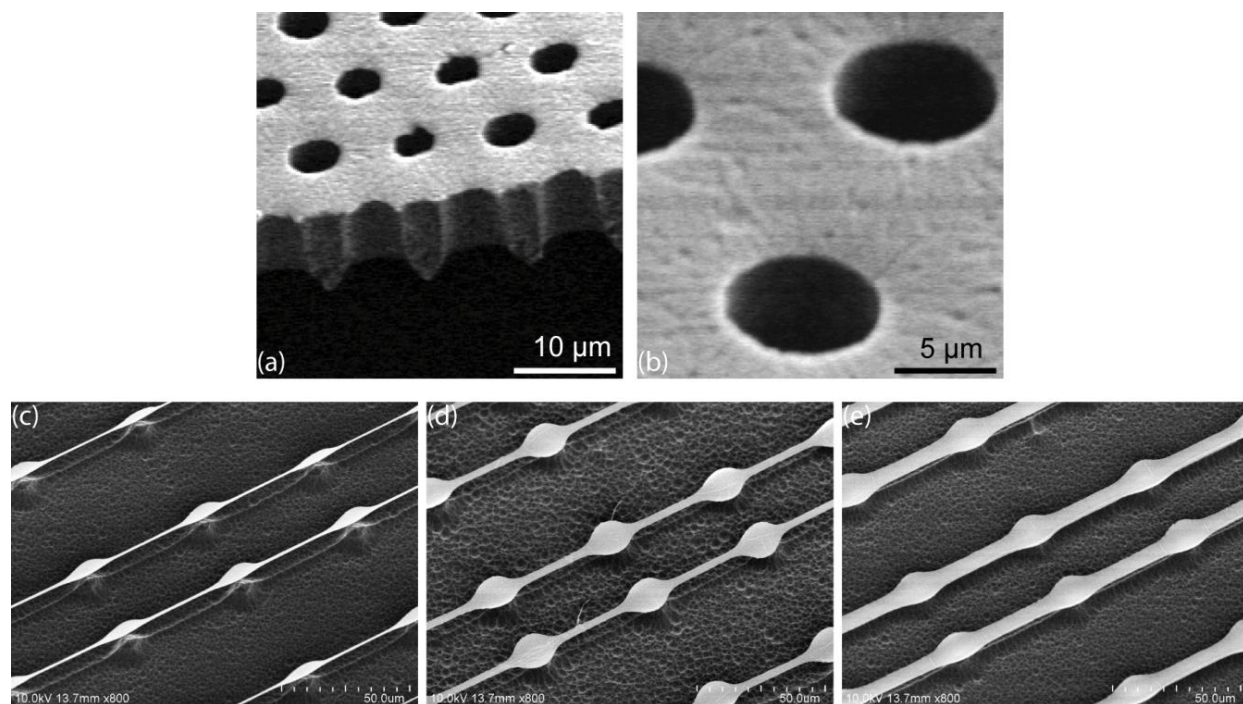


Fig. S3 SEM images of free-standing PDMS microfiltration membranes (a&b) and beam structures (c-e). (a) Cross-sectional and (b) zoom-in images of the PDMS microfiltration membrane. The membrane thickness was 10 μm, and the hole diameter was 4 μm. (c)-(e) Free-standing PDMS beam structures, with the beam thickness of 500 nm and total beam length of 800 μm. The minimum beam widths were 2 μm (c), 5 μm (d), 10 μm (e), respectively.