

Supporting Information

A continuous tilting of micromolds for fabricating polymeric microstructures in microinjection

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Fig. S1 The developed multidirectional tilted UV lithography system with a controllable chuck.

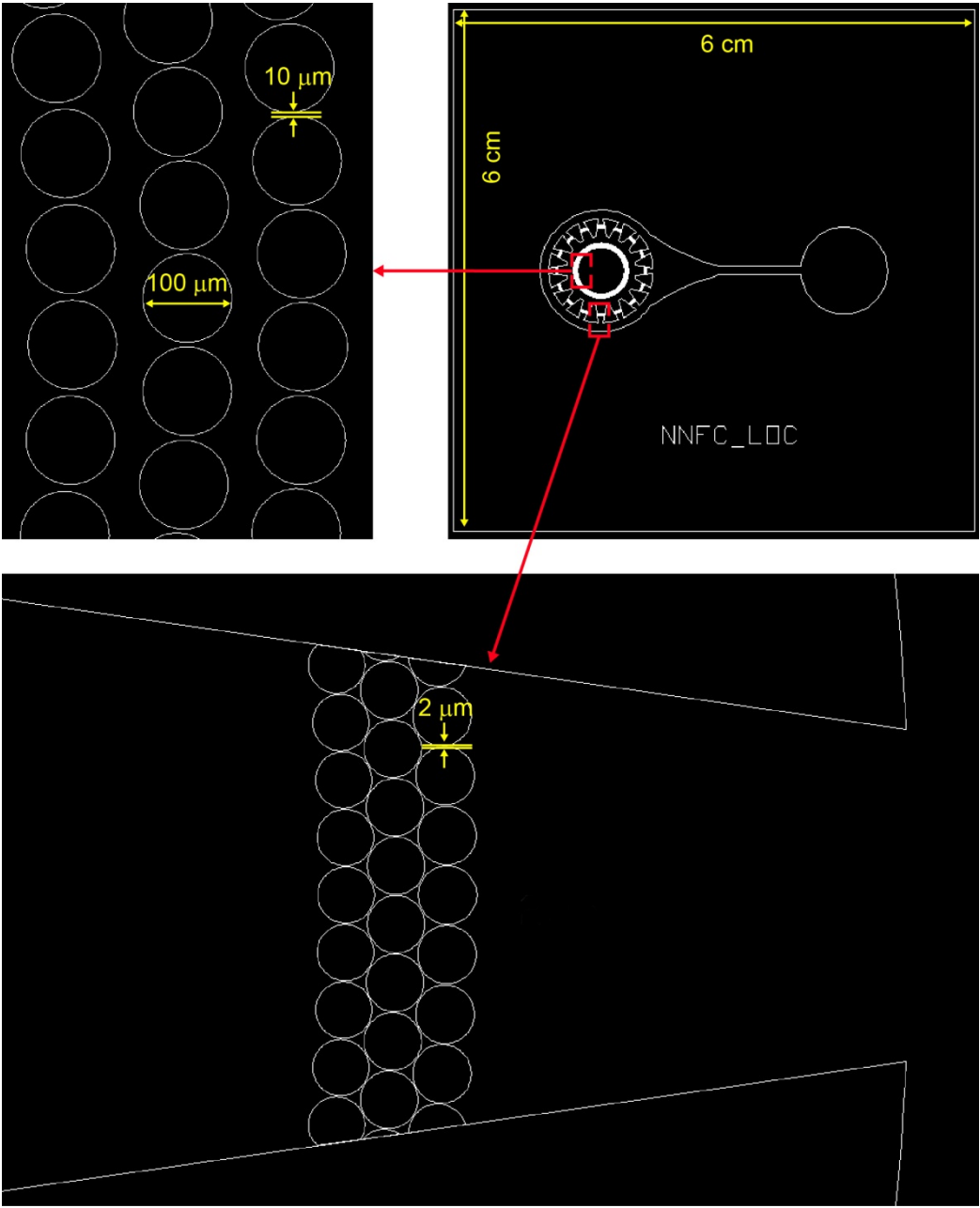


Fig. S2 The detailed mask designs of micro-structures for microfluidic device.

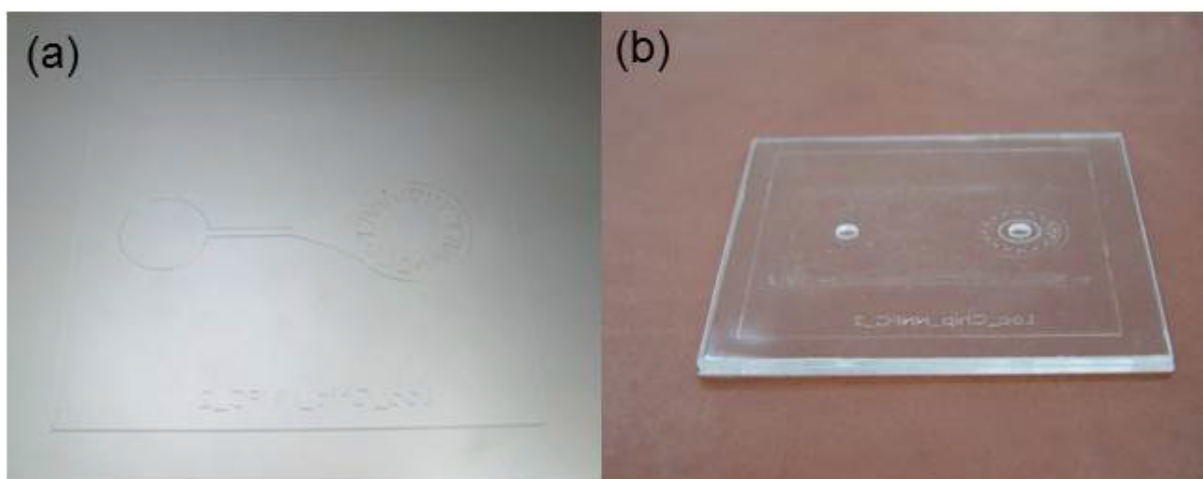


Fig. S3 The pictures of (a) the master Ni stamp and (b) the plastic-based microfluidic device after bonding of top and bottom plastic plate.



Fig. S4 The picture of the microinjection molding machine.

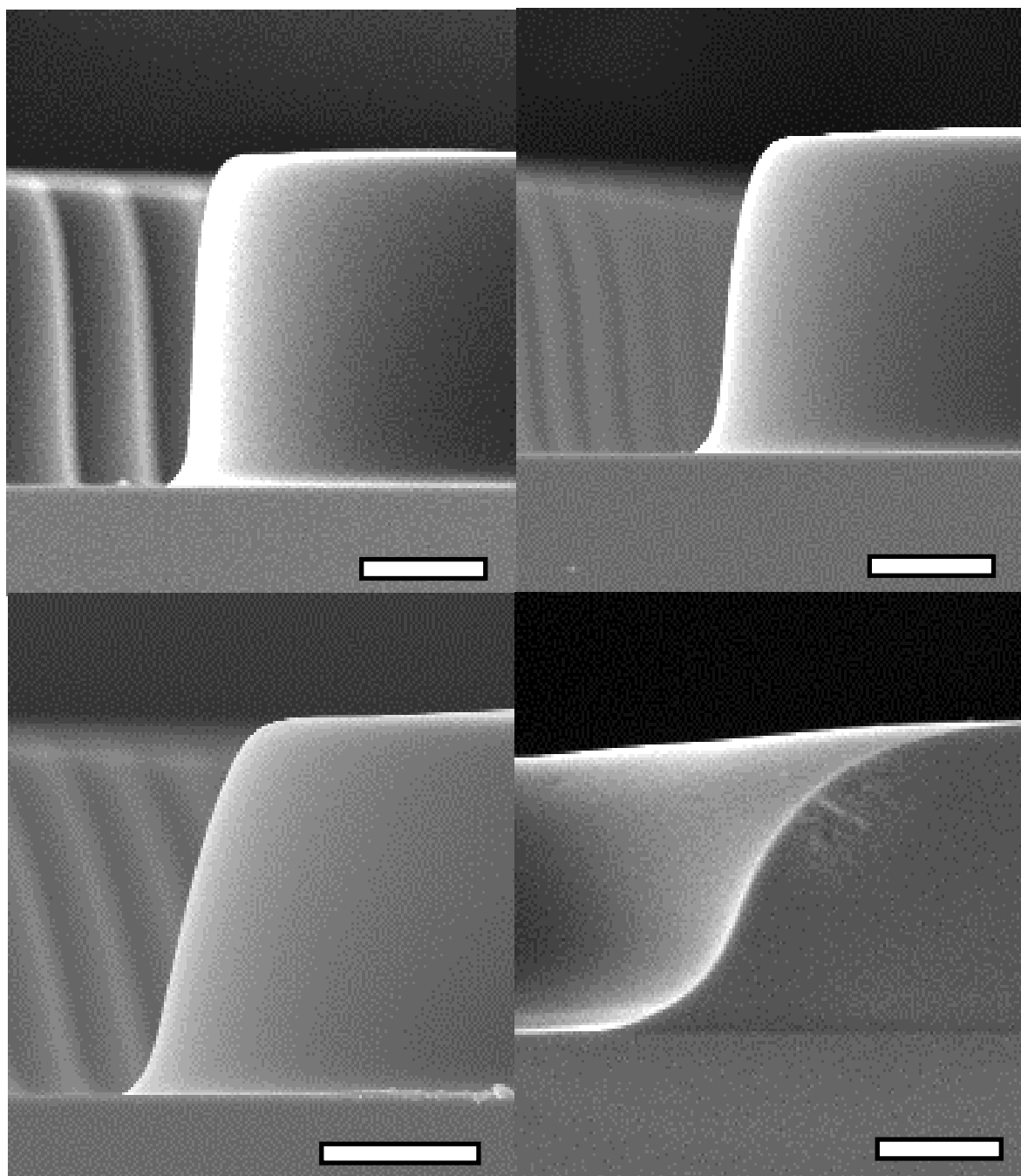


Fig. S5 SEM images of different tilting angles of (a) 5°, (b) 10°, (c) 20°, and (d) 30° applied to the Si wafer respectively. All the scale bars are 10 μm.

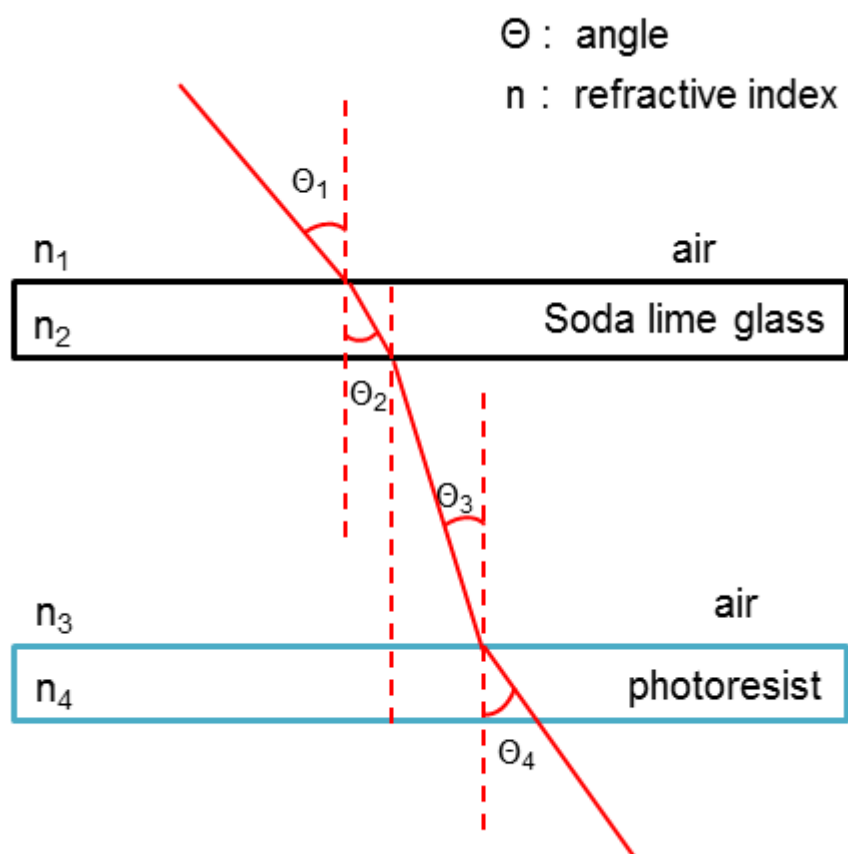


Fig. S6 Schematic illustration of ray tracing at different materials in the system.

Shell's Law eqn is as following:

$$\frac{\sin \theta_1}{\sin \theta_2} = \frac{n_2}{n_1} \quad (\text{S1})$$

Table S1 Refractive index of materials.

Material	Refractive index
Air	1.00
Soda lime glass	1.52
Photoresist (THB)	1.54

Table S2 The chart of applied tilting angles of chuck, expected slope angles from Shell’s law, and actual slope angles from obtained structures.

Tilting angle	Expected slope angle	Actual slope angle from structure
0	0	0
5	3.2	3.22 ± 0.65
10	6.4	6.15 ± 0.35
20	12.8	13.53 ± 0.25
30	19.2	none