SUPPLEMENTARY INFORMATION

Microfluidic circuit consisting of indivisualized components with 3D slope valve for automation of sequential liquid control

Dong Hee Kang,[a] Na Kyong Kim,[a] Sang Woo Park,[b] Wonoh Lee [a]

and Hyun Wook Kang [*a]

[a] *Department of Mechanical Engineering, Chonnam National University*

77 Youngbong-ro, Buk-Gu, Gwangju 61186, Republic of Korea

[b] *Department of Ophthalmology, Chonnam National University Medical School and Hospital, Baekseo-ro, Dong-Gu, Gwangju 61469, Republic of Korea*

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*Corresponding author: Prof. Hyun Wook Kang

Tel: +82-62-530-1662

Fax: +82-62-560-1689

E-mail: kanghw@chonnam.ac.kr

Supplementary material

Figure S1. The schematics of printing and stacking of 3D printed parts with (a) horizontal and (b) vertical direction using stereolithography apparatus (SLA). The SEM images of 3D printed part surface (a-1 and a-2) on stacking direction and (b-1 and b-2) on printing direction.

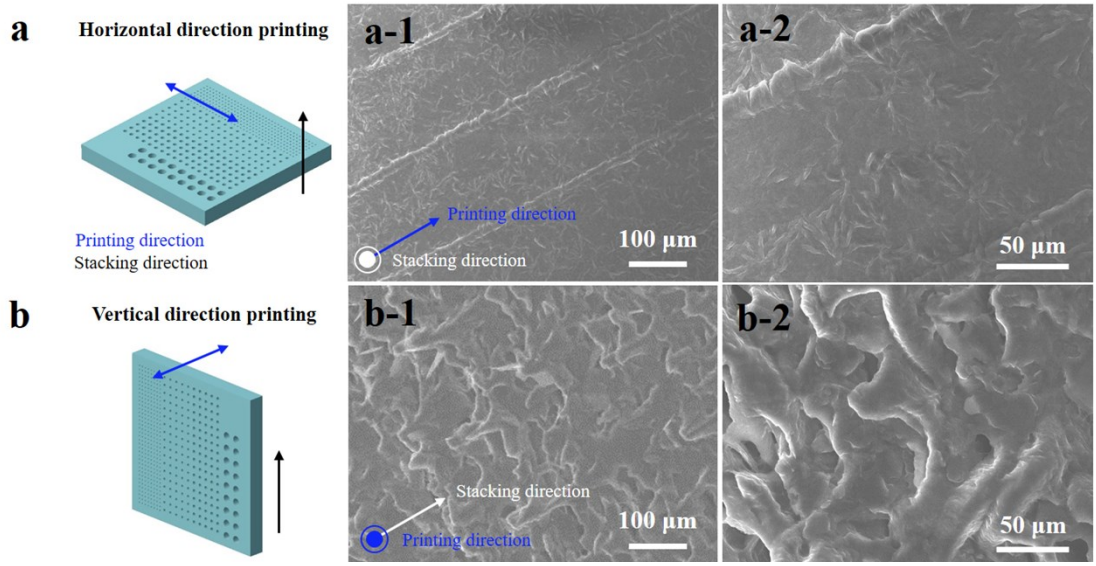
Figure S2. The SEM images of 3D printed surface on (a-d) stacking direction and (e-h) printing direction with circle hole (Designed diameter, D =500, 250, 200, 100 μm).

Figure S3. (a) A schematic and (b) optical microscope image of liquid meniscus in connection channel for capillary pressure calculation.

Figure S4. Liquid column head position in assembled module straight channel (0º Slope angle) with increasing module holder disk rotation speed.

Figure S5. A flow chart of the fluorescence-linked immuosorbent assay (FLISA) protocol for VEGF detection in microfluidic disk platform. A VEGF reagents using bead-based FLISA in microfluidic disk are controlled through disk angluar velocity and rotation direction for reagents incubation and sedimentation of beads.

Table S1. Physical properties (density, surface tension, viscosity at 25℃) of ethanol, DI water, oilve oil, polyethylene glycol, and glycerol



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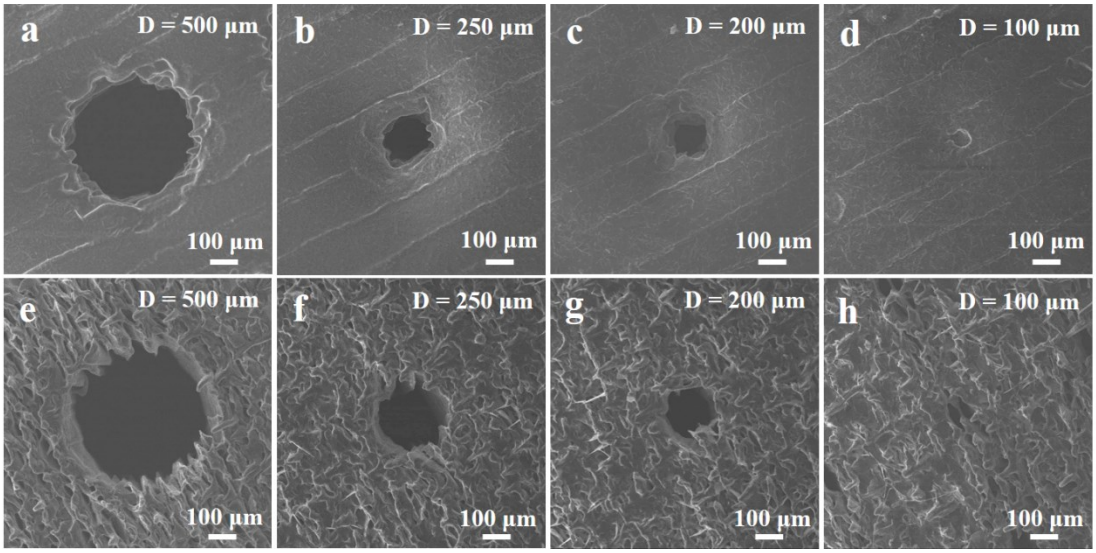

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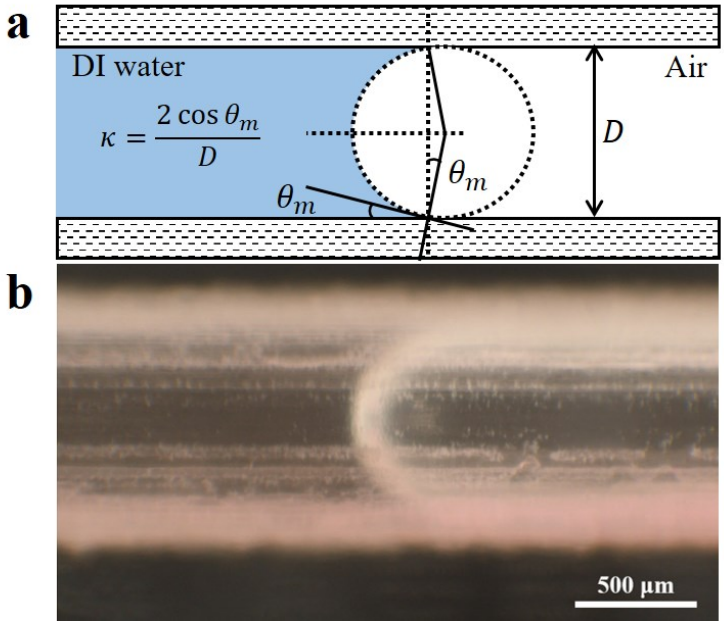

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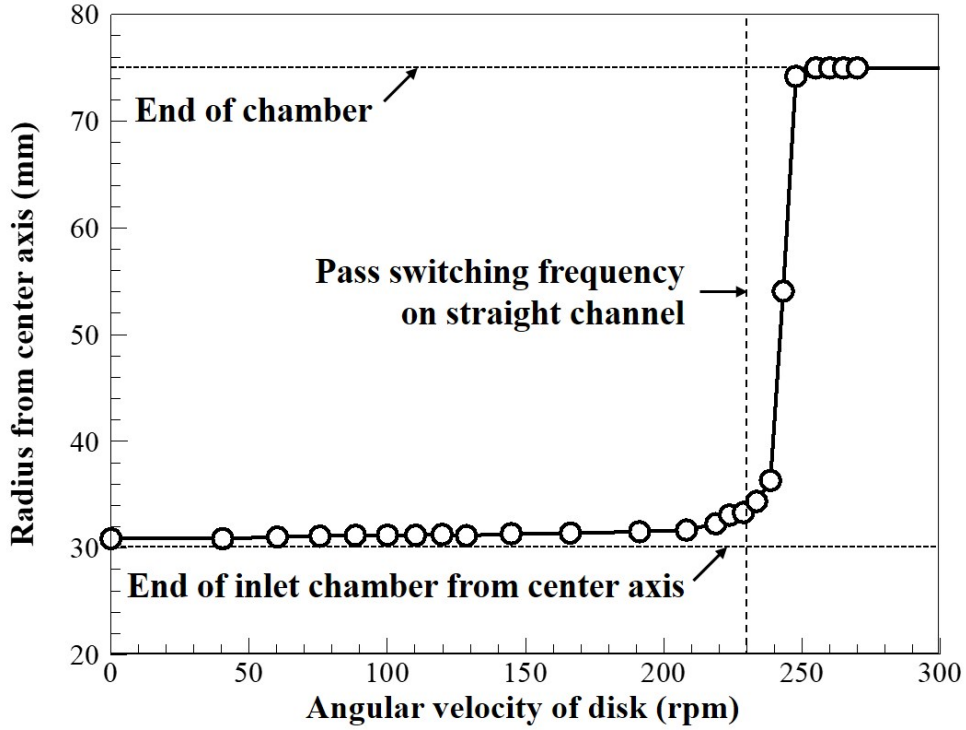

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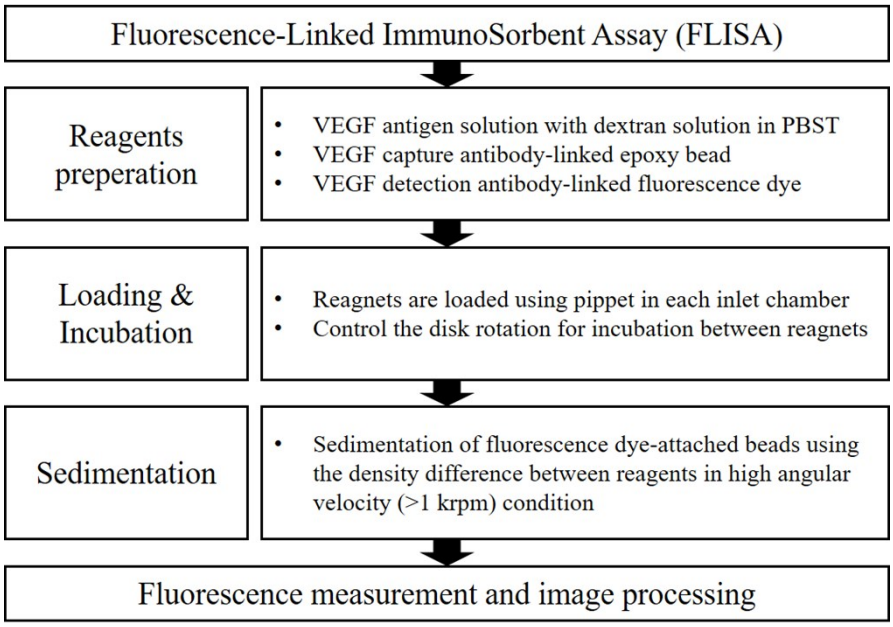

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Liquid	ρ (kg m^{-3})	γ (mN m^{-1})	μ (mPa s)
Ethanol [1]	782	22.4	1.05
DI water [2]	997	72.0	0.89
Olive oil [3,4]	915	33.0	69.0
Polyethylene glycol [5,6]	1128	42.4	101.5
Glycerol [7-9]	1261	63.0	917.6

Notes and references

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