Lab on a Chip

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PAPER

On-chip Self-assembly of Cell Embedded Microstructures to Vascular-like Microtubes

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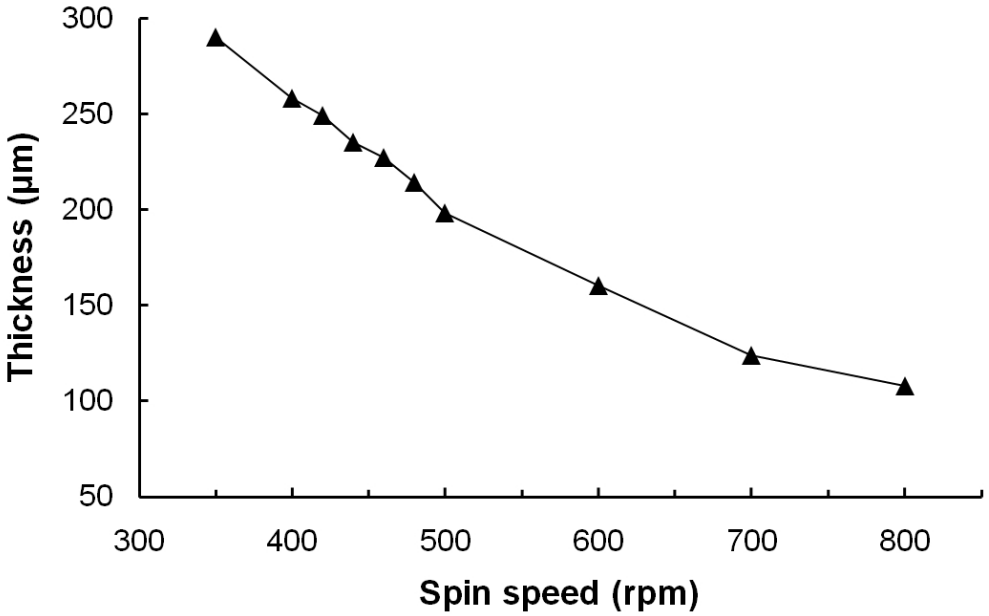
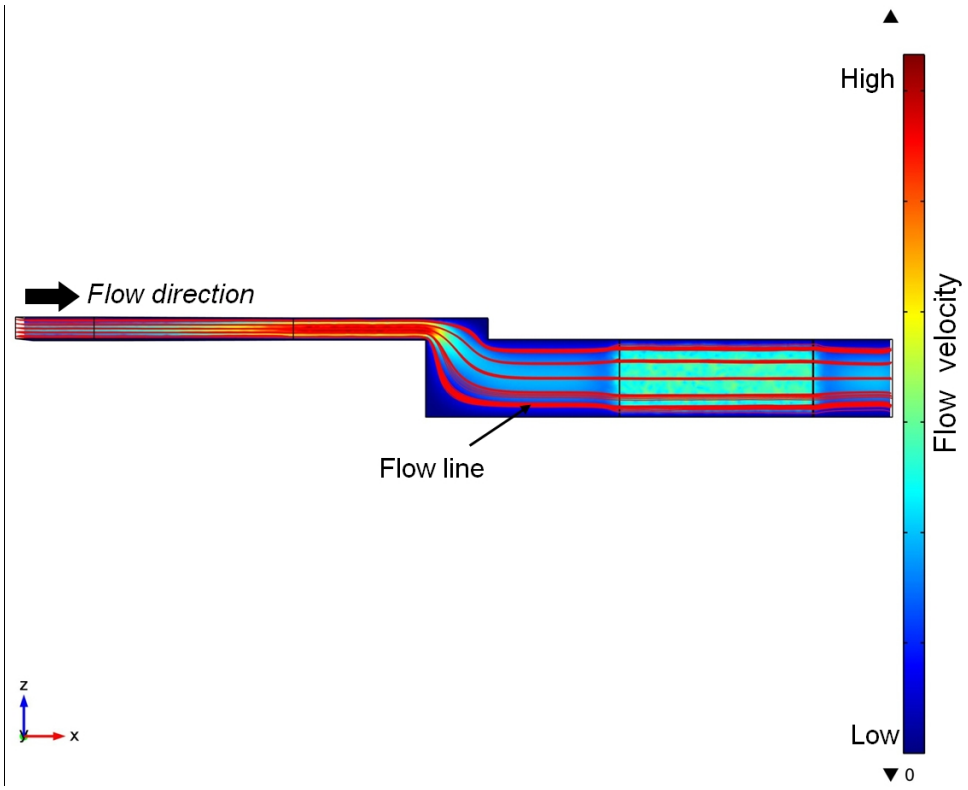
† Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/b000000x/

‡ Footnotes should appear here. These might include comments relevant to but not central to the matter under discussion, limited experimental and spectral data, and crystallographic data.

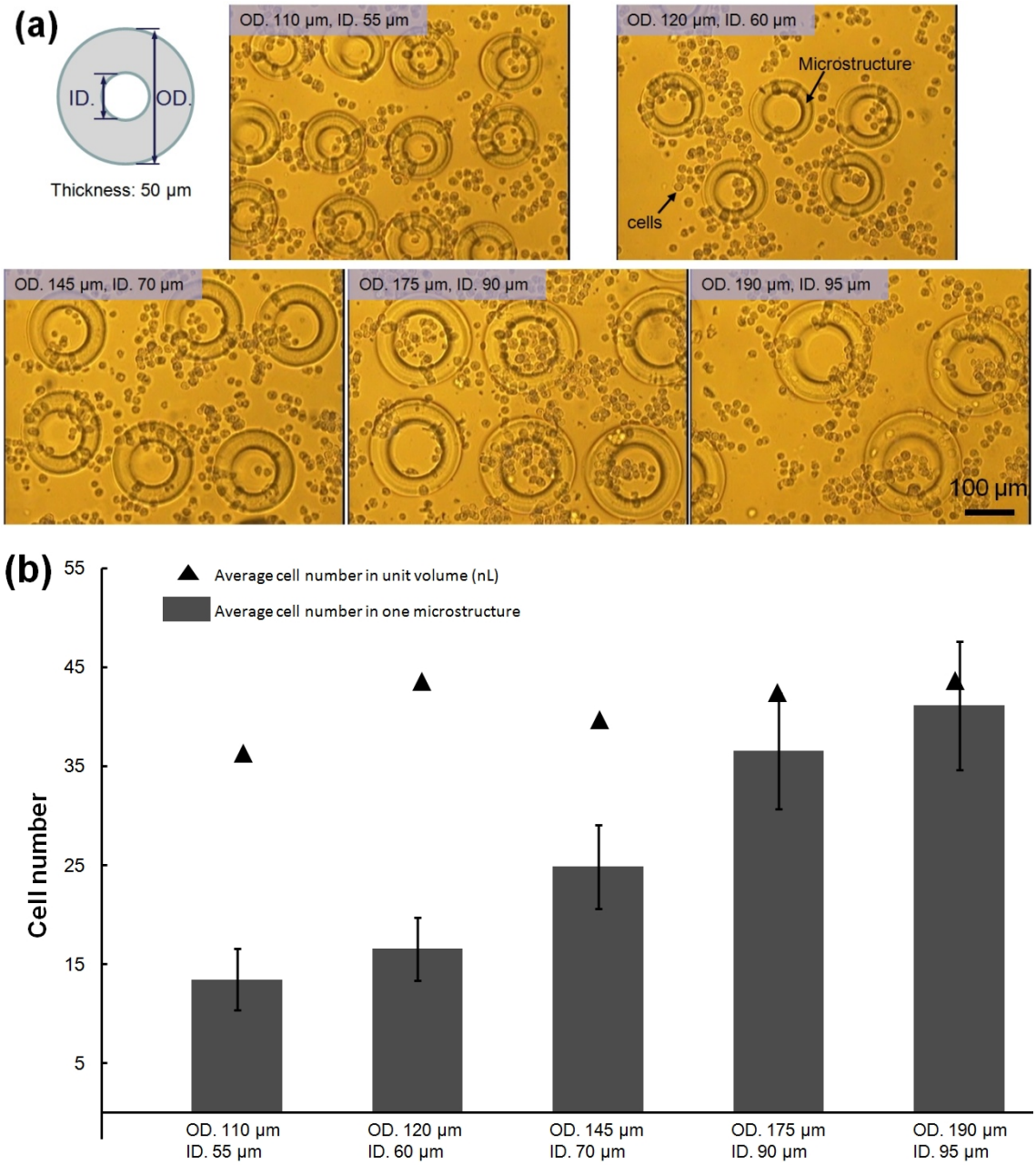
Supplementary information



SI-Fig. 1 The relationship between the spin speed and the PDMS thickness. The PDMS (SILPOT 184 W/C, Dow Corning Toray) was mixed at 10:1 ratio for the spin coating experiments.



SI-Fig. 2 The numerical simulation of the flow line and velocity (The red lines are flow lines. The blue colour area represents low flow velocity while the red represents high.) The simulation result shows that the velocity difference clearly occurs at the boundary between fabrication area and assembly area.



SI-Fig. 3 (a) Different sizes of donut-shaped microstructures embedding NIH/3T3 cells. (b) The evaluation result of the cell concentration inside different donut-shaped structures.

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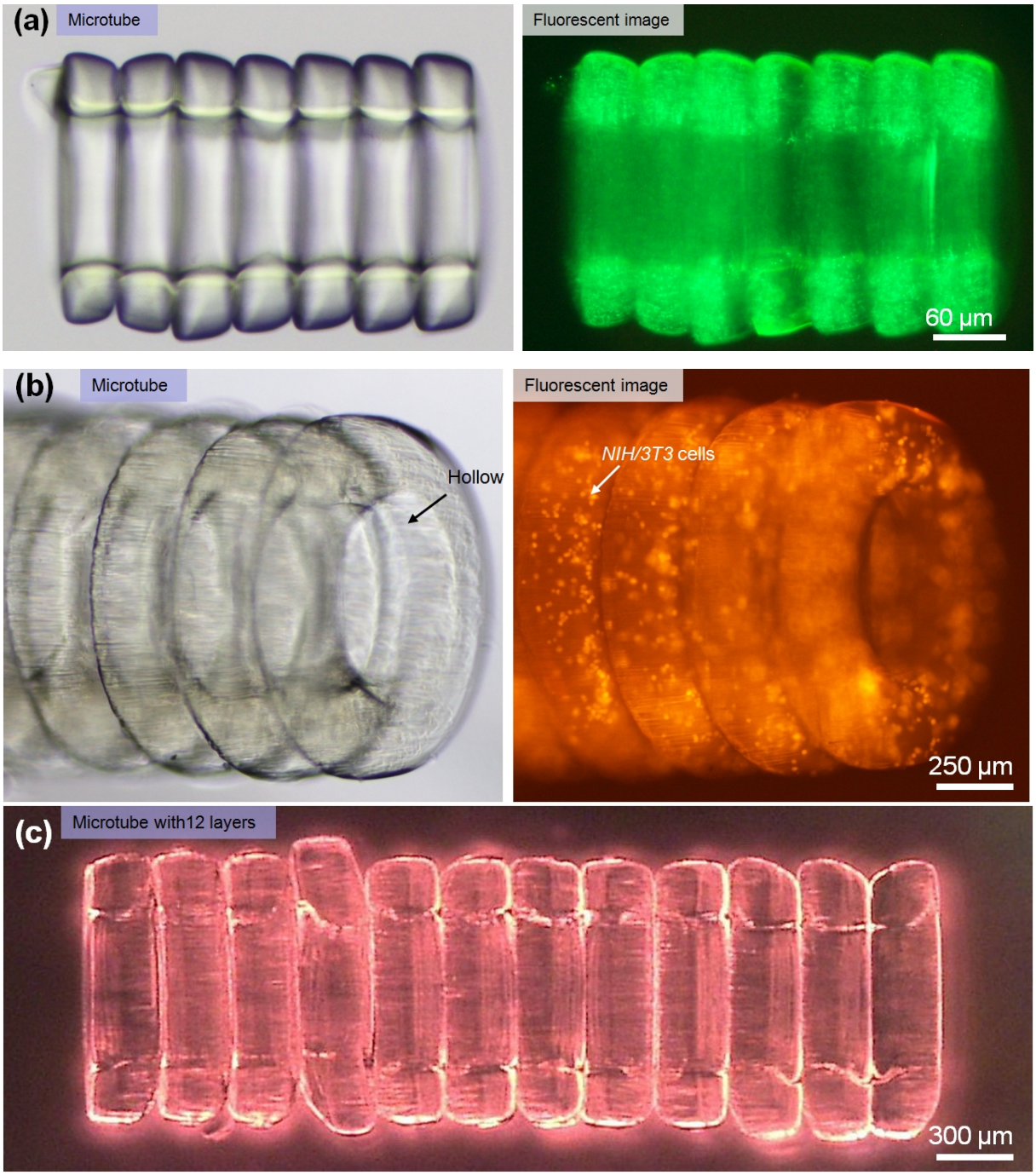

SI-Fig. 4 Images of the assembled microtubes with different sizes. (a) A microtube with about 200 μm in outer diameter. (b) The images to show the hollow of the microtube. The cells were stained with CellTracker® CMTMR (Life Technologies). (c) A microtube with 12 layers and about 3 mm in length.

SI-Video. 1 The self-assembly result for assembling 4 layers in about 4 seconds. The flow velocity v_2 was about 250 μm/s. (The video is in real time.)

SI-Video. 2 The self-assembly result with very high speed for assembling 4 layers within 1 second. The flow velocity v_2 was about more than 2000 μm/s. (The video is in real time.)

SI-Video. 3 The 3D confocal image of the microtube. It shows the tubular shape and the hollow of the vascular-like microtube clearly.