

Supplementary Material (ESI) for Lab on a Chip

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A simple strategy for *in situ* fabrication of smart hydrogel microvalve within microchannels for thermostatic control

Supplementary Material

Shuo Lin,^a Wei Wang,^{*,a} Xiao-Jie Ju,^a Rui Xie,^a and Liang-Yin Chu^{*,a,b}

^a School of Chemical Engineering, Sichuan University, Chengdu, Sichuan, China

E-mail: wangwei512@scu.edu.cn (W. Wang), chuly@scu.edu.cn (L.-Y. Chu); Tel & Fax: +86 28 8546 0682

^b State Key Laboratory of Polymer Materials Engineering, and Collaborative Innovation Center for Biomaterials Science and Technology, Sichuan University, Chengdu, Sichuan, China

Supplementary Figures S1 and S2

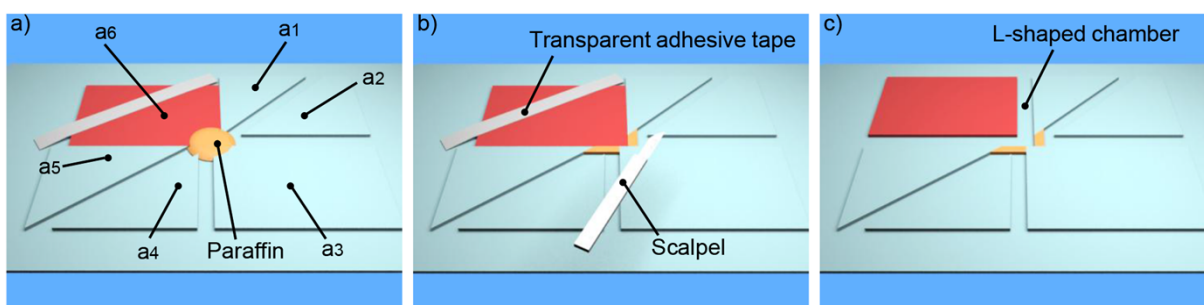


Fig. S1 Schematic illustration of the preparation process of the L-shaped chamber. (a) Six coverslips (a1-a6) are patterned on a glass slide, with five fixed by UV-curable adhesive and the other one fixed (a6) by transparent adhesive tape. Then, the melted paraffin is added in the cross-microchannel followed with cooling to obtain solid paraffin. (b) The patterned paraffin that used for constructing the L-shaped chamber is obtained by precisely removing its undesired part with a scalpel under optical microscope. (c) The coverslip (a6) is moved to the desired site and fixed with UV-curable adhesive to create the L-shaped chamber.

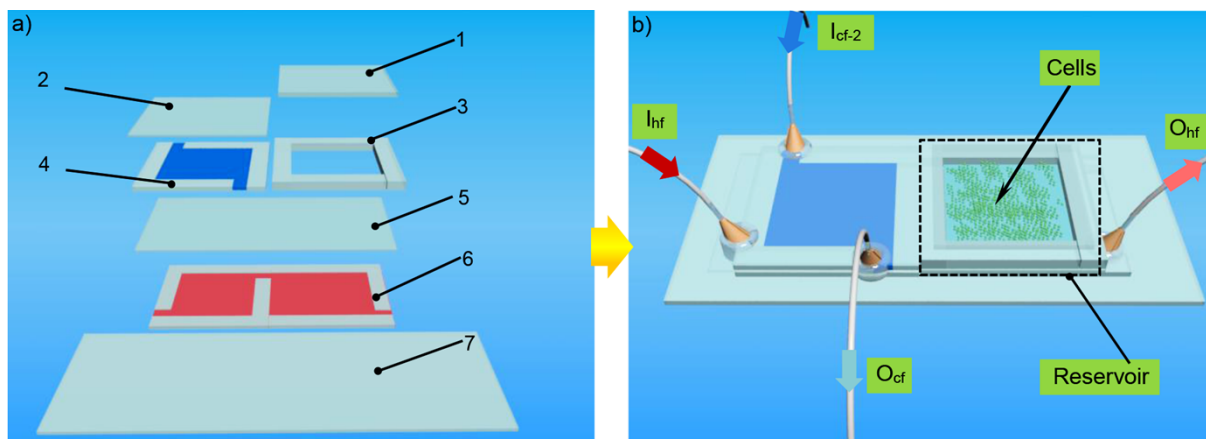


Fig. S2 Fabrication of the microdevice for cell culture. (a) Six coverslips (1-6) are assembled on a glass slide (7), with five coverslips (2-6) bonded on the glass slide by UV-curable adhesive. The coverslip (3), covered with coverslip (1), works as a reservoir for cell culture. The reservoir spaces in coverslip (4) (blue area) and coverslip (6) (red area) are respectively used for flowing cold fluid and hot fluid. (b) Schematic illustration of the microdevice for cell culture. In the left part of this device, hot fluid flows in the lower channel (from I_{hf} to O_{hf}), and cold fluid flows in the upper channel (from I_{cf-2} to O_{cf}). Hot fluid that is cooled by the cold fluid flows under the reservoir for controlling the temperature for cell culture.