

1 *Scientific report*

2 **Supplementary information**

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4 **Fabrication of Triple-parted Stomata-inspired Membrane with Stimuli-**  
5 **responsive Functions**

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7 Hyejeong Kim<sup>a</sup>, and Sang-Joon Lee<sup>a,\*</sup>

8 <sup>a</sup> Center for Biofluid and Biomimic Research, Department of Mechanical Engineering,  
9 Pohang University of Science and Technology (POSTECH), Pohang, 790-784, South Korea.

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11 \* Corresponding author.

12 Tel.: +82 54 279 2169; Fax: +82 54 279 3199.

13 E-mail address: sjlee@postech.ac.kr (S.J. Lee)

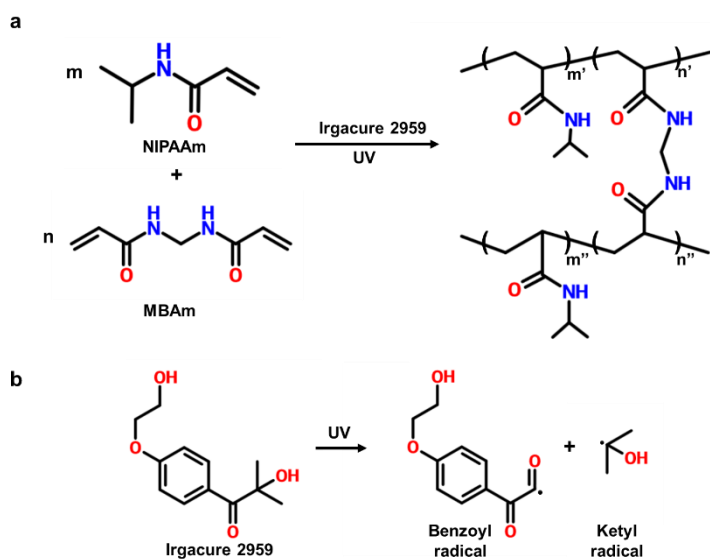
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# 1 Supplementary

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5 **Figure S1.** (a) Schematic of PNIPAAm hydrogel synthesized through free radical  
 6 copolymerization with MBAm as a crosslinking agent. (b) Schematic of free radical formation  
 7 with photoinitiator illumination.

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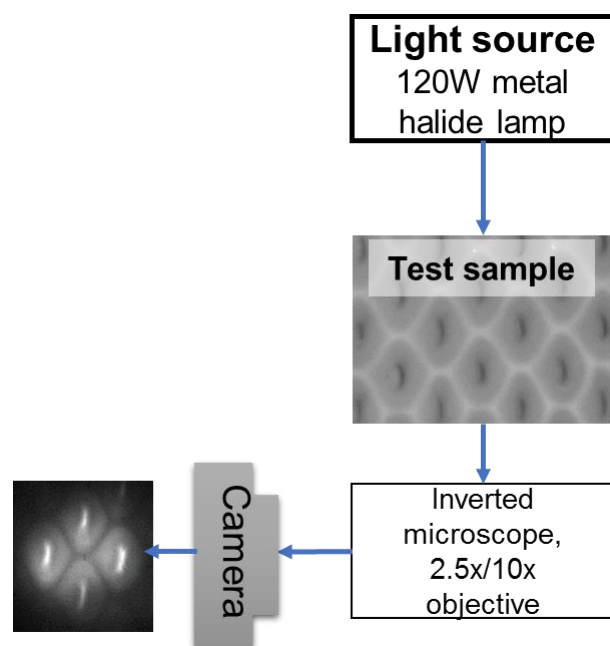
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#	NIPAAm	Irgacure 2959	MBAm	CR (wt %)
CR 1	100 mg/ 500 $\mu$ l	1 mg/ 100 $\mu$ l	1 mg/ 100 $\mu$ l	0.143
CR 1.5			1.5 mg/ 100 $\mu$ l	0.214
CR 2			2 mg/ 100 $\mu$ l	0.286
CR 2.5			2.5 mg/ 100 $\mu$ l	0.357
CR 3			3 mg/ 100 $\mu$ l	0.429

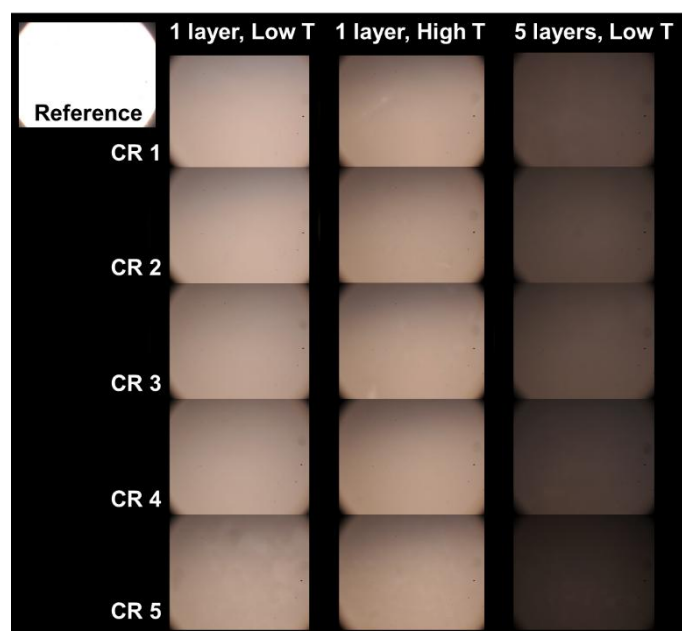
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11 **Table S1.** Chemical composition of five different pre-gel solutions. The pre-gel solutions  
 12 contain the same amount of monomers and photoinitiator but different crosslinker (MPAm)  
 13 contents.

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2 **Figure S2.** Schematic of the experimental setup for light intensity measurement. Light from a  
3 120 W metal halide lamp is illuminated to the test samples. The light transmitted through the  
4 samples is detected by an inverted microscope equipped with a Photron APX camera.



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6 **Figure S3.** Optical images of SIM fabricated with five different pre-gel solutions (CR 1–CR 3).  
7 The relative opacity of the membrane is evaluated from the light intensity transmitted through  
8 the membranes. The transmitted light intensity decreases with increasing crosslinking level and  
9 membrane thickness.