

## Supporting Information

# Multifunctional polyurethane sponge for PCR enhancement

Seunghwan Seok,<sup>†</sup> Sujeong Shin,<sup>‡</sup> Tae Jae Lee,<sup>‡</sup> Jae-Min Jeong,<sup>†</sup> MinHo Yang,<sup>‡</sup> Do Hyun Kim,<sup>†</sup> Jung Youn Park,<sup>§</sup> Seok Jae Lee,<sup>‡</sup> Bong Gill Choi,<sup>\*,||</sup> and Kyoung G. Lee<sup>\*,‡</sup>

<sup>†</sup>Department of Chemical & Biomolecular Engineering, KAIST, 291 Daehak-ro, Yuseong-gu, Daejeon 305-701, Republic of Korea

<sup>‡</sup>National Nanofab Center, 291 Daehak-ro, Yuseong-gu, Daejeon 305-806, Republic of Korea

<sup>§</sup>Biotechnology Research Division, National Fisheries Research & Development Institute (NFRDI), 216 Gijang Haean-Ro, Gijang-Up, Gijang-Gun, Busan 619-705, Republic of Korea

<sup>||</sup> Department of Chemical Engineering, Kangwon National University, Samcheok 245-711, Republic of Korea  
Fax: (+82) 42-366-1990

\*E-mail: bgchoi@kangwon.ac.kr

\*E-mail: kglee@nnfc.re.kr, kglee003@gmail.com

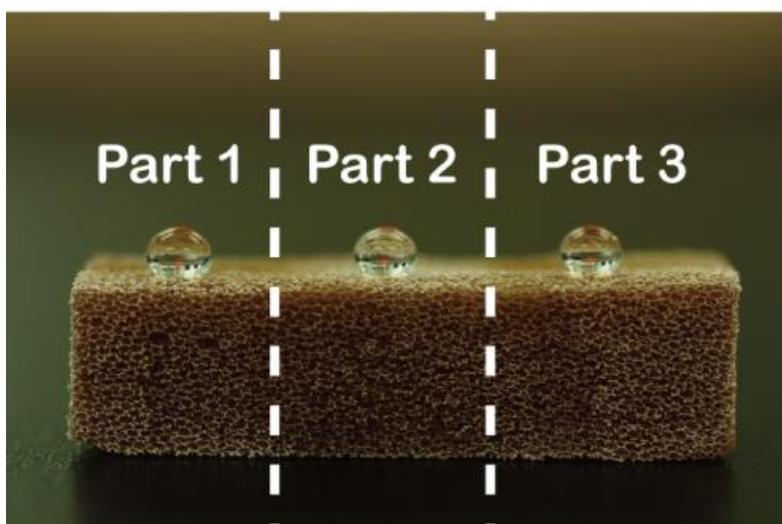


Figure S1. Water drops on surface of polysiloxane coated PU sponge.

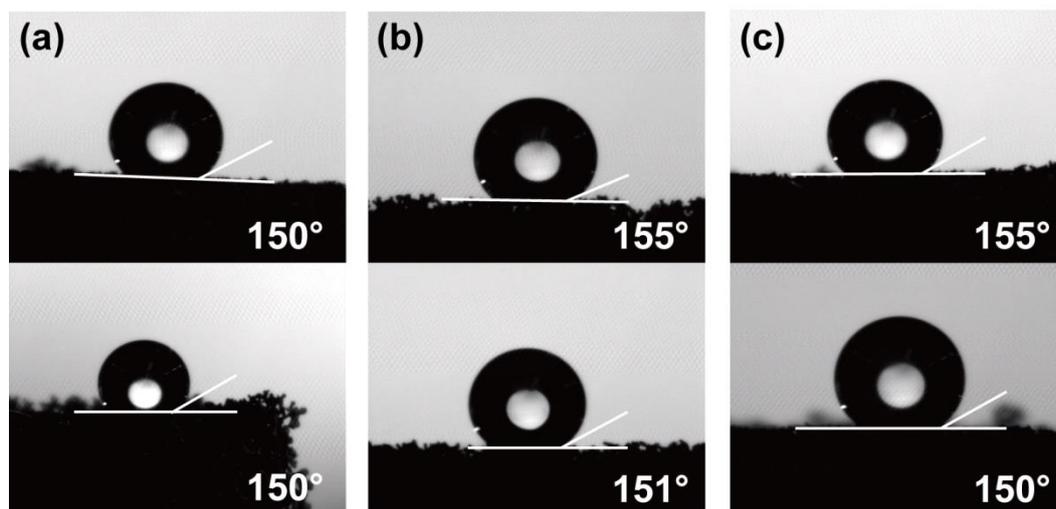
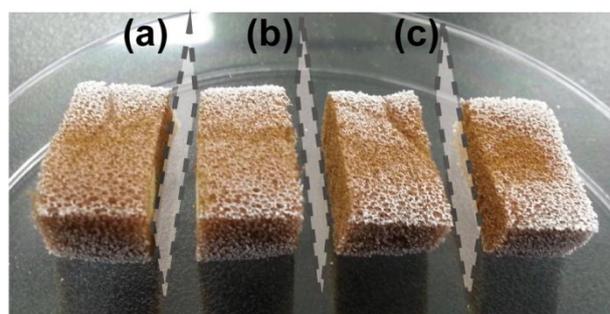


Figure S2. Contact angles on surfaces of cross-section polysiloxane coated PU sponge.

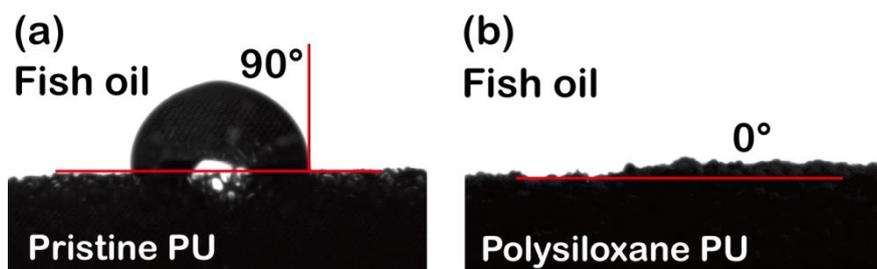


Figure S3. Contact angles on (a) pristine PU and (b) polysiloxane coated PU for fish oil.

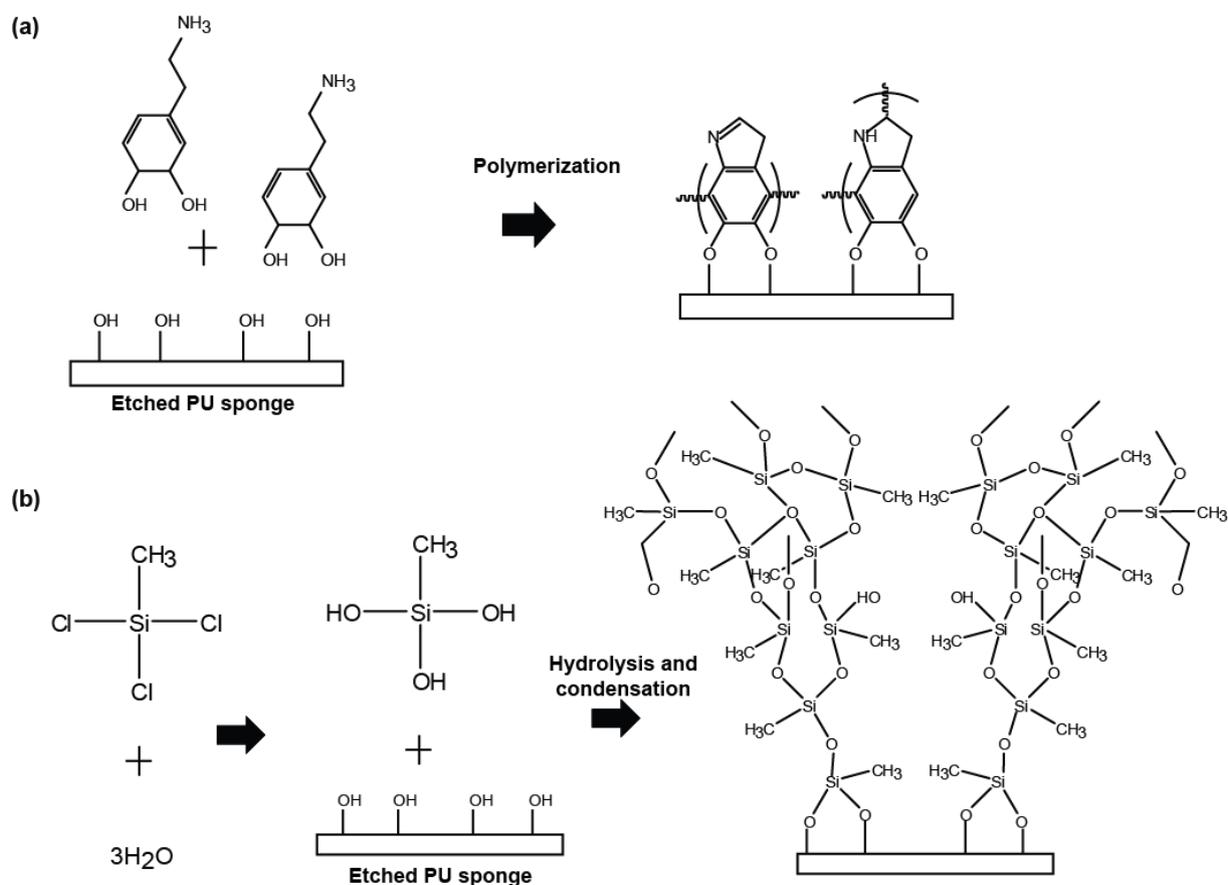


Figure S4. Proposed (a) PDA and (b) polysiloxane coating mechanism.

The chemical reaction is simplified and schematically illustrated in Figure S4. The detailed chemical reaction pathway are well explained in the previously reports.<sup>S1-S3</sup>

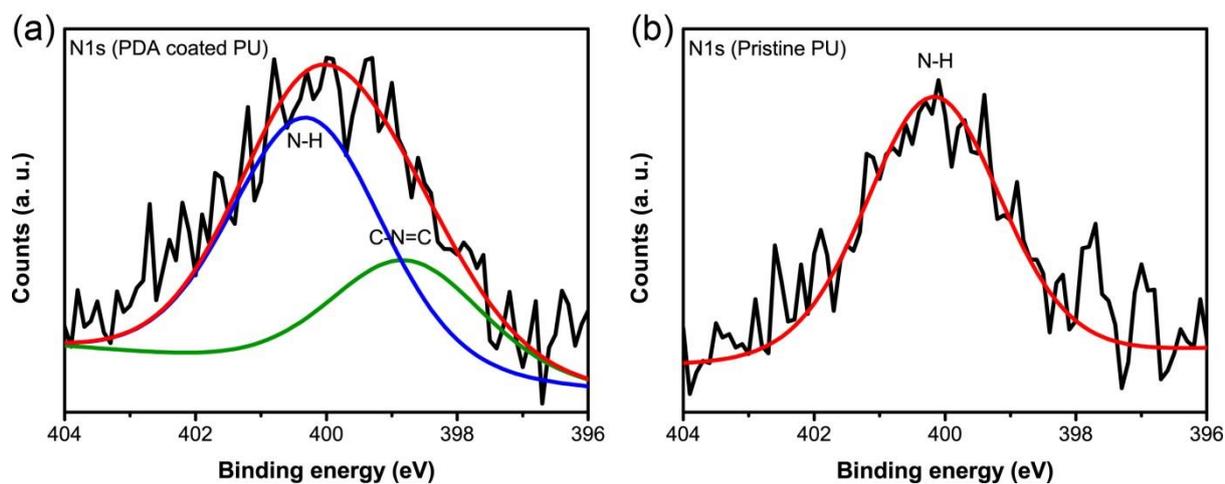


Figure S5. The high-resolution N1s XPS spectrum for (a) PU and (b) PDA coated PU.

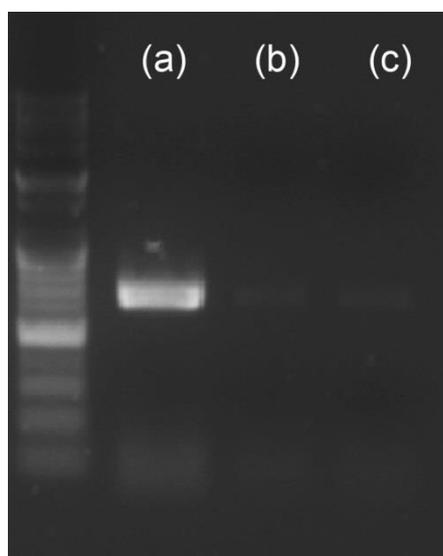


Figure S5. Agarose gel images of marker and amplified DNA band of (a) control (with target DNA), (b) positive control (non-complementary target DNA), and (c) negative control (without target DNA).

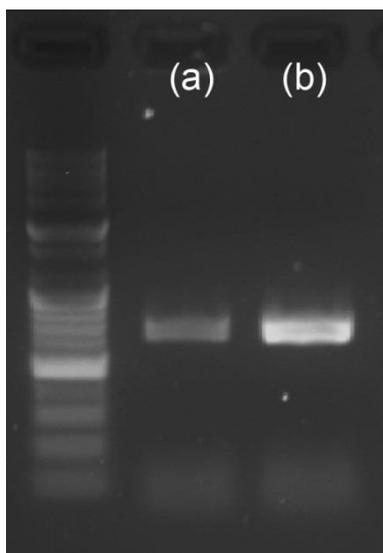


Figure S6. agarose gel images of marker and amplified DNA band of before (a) and after (b) filtering of both oil and tissue fragment control

Table S1. The amount of DNA recovered during adsorption and desorption of superhydrophilic PU sponge.

	DNA concentration (ng/ $\mu$ L)		Recovery (%)
	Before filtration	After filtration	
Sample 1	536.2	514.1	95.9
Sample 2	549.3	521.3	94.9
Sample 3	527.5	491.5	93.2
Sample 4	564.3	531.8	94.2

## References

- S1. Hong, S.; Na, Y. S.; Choi, S.; Song, I. T; Kim, W. Y.; H. Lee., Non-Covalent Self-Assembly and Covalent Polymerization Co-Contribute to Polydopamine Formation. *Adv. Funct. Mater.* **2012**, *22*, 4711–4717.
- S2. Xu, Q.; Kong, Q.; Liu, Z.; Zhang, J.; Wang, X.; Liu, R.; Yue, L.; Cui, G., Polydopamine-coated Cellulose Microfibrillated Membrane as High Performance Lithium-ion Battery Separator. *RSC Adv.* **2014**, *4*, 7845–.

S3. Liu, X.-C.; Wang, G.-C.; Liang, R.-P.; Shi, L. Qiu, J.-D. Environment-Friendly Facile Synthesis of Pt Nanoparticles Supported on Polydopamine Modified Carbon Materials. *J. Mater. Chem. A*. **2013**, *1*, 3945–3953.