

## Supporting information

### **Flexible and transparent nanohole-patterned film with antibacterial properties against *Staphylococcus aureus***

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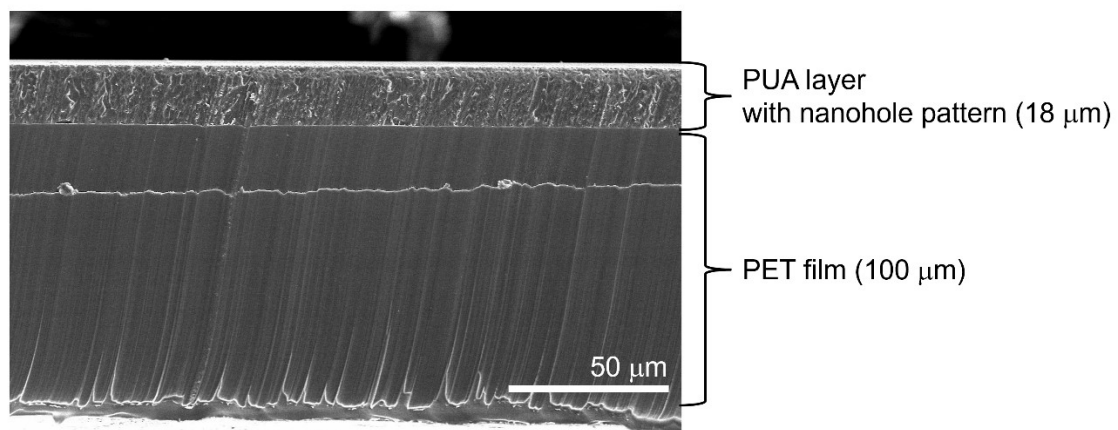
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## Table of contents

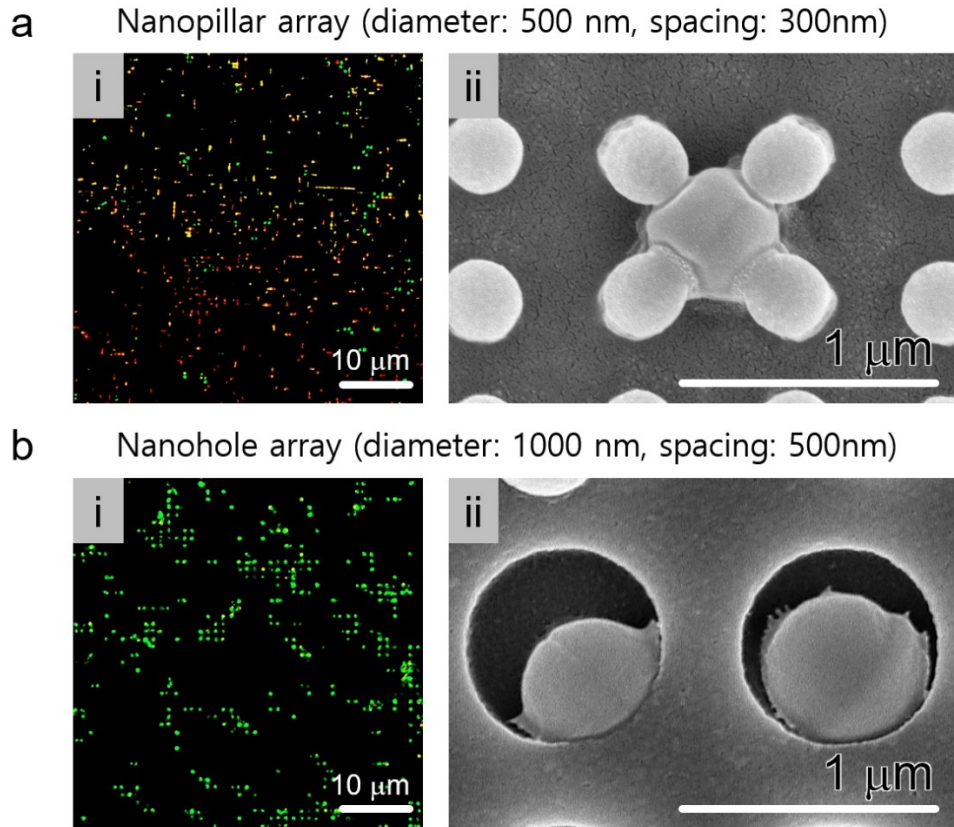
<b>Table S1</b>	Atomic composition of the N <sub>1s</sub> and P <sub>2p</sub> in the XPS results of “M-PUA bare” samples exposed in LB medium during 18 hr, 7 days, and 14 days.	S-3
<b>Figure S1</b>	Cross-section view of the fabricated antibacterial film (total film thickness: approximately 118 μm, PET film: 100 μm, and PUA layer approximately 18 μm).	S-4
<b>Figure S2</b>	Mechano-bactericidal and mechano-bacteriostatic evaluation of nanopillar (diameter: 500 nm and spacing: 300 nm) and nanohole (diameter: 1000 nm and spacing 500 nm) patterns against <i>S. aureus</i> . (a-i and b-i) Fluorescence image (green: live bacteria and red: dead bacteria) and (a-ii and b-ii) SEM images.	S-5
<b>Figure S3</b>	Low magnification SEM images of <i>S. aureus</i> in nanohole film (“H_1,” diameter: 1000 nm and spacing: 500 nm). The red box is a magnified SEM image of the “H_1” film. The yellow arrow in the magnified “H_1” image shows the line for binary fission of <i>S. aureus</i> grown for 18 hr.	S-6
<b>Figure S4</b>	XPS spectra of (a) non-MPC coated surface and (b) MPC coated surface.	S-7
<b>Figure S5</b>	Evaluation of MPC-coated surface mechanical durability properties using adhesive taping test (ATT). (a) Water contact angle result, and (b) FT-IR spectrum.	S-8
<b>Figure S6</b>	Evaluation of the chemical durability properties of MPC-coated surfaces exposed to LB medium for 18 hr, 7 days, and 14 days. (a) FT-IR spectrum and XPS results (b) N <sub>1s</sub> and (c) P <sub>2p</sub> ).	S-9

**Table S1.** Atomic composition of the N<sub>1s</sub> and P<sub>2p</sub> in the XPS results of “M-PUA bare” samples exposed in LB medium during 18 hr, 7 days, and 14 days.

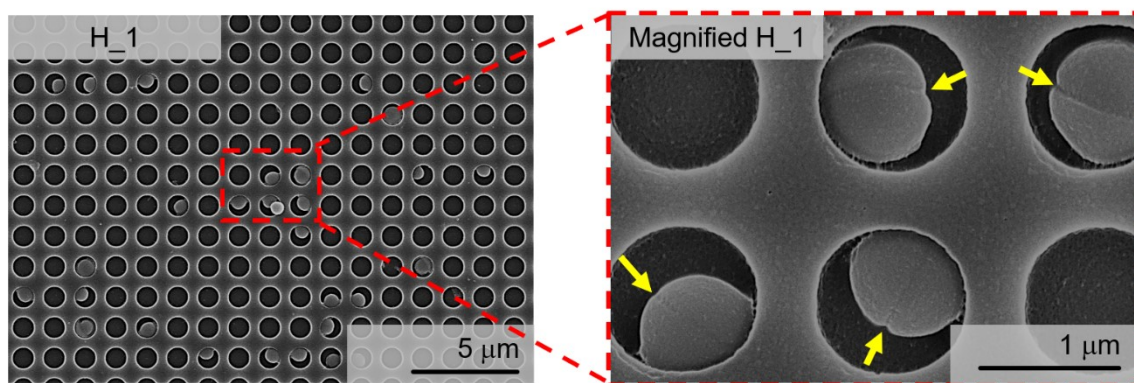
Sample	Atomic composition (%)	
	N <sub>1s</sub>	P <sub>2p</sub>
18 hours	9.01	1.12
7 days	8.81	0.68
14 days	4.85	0.64



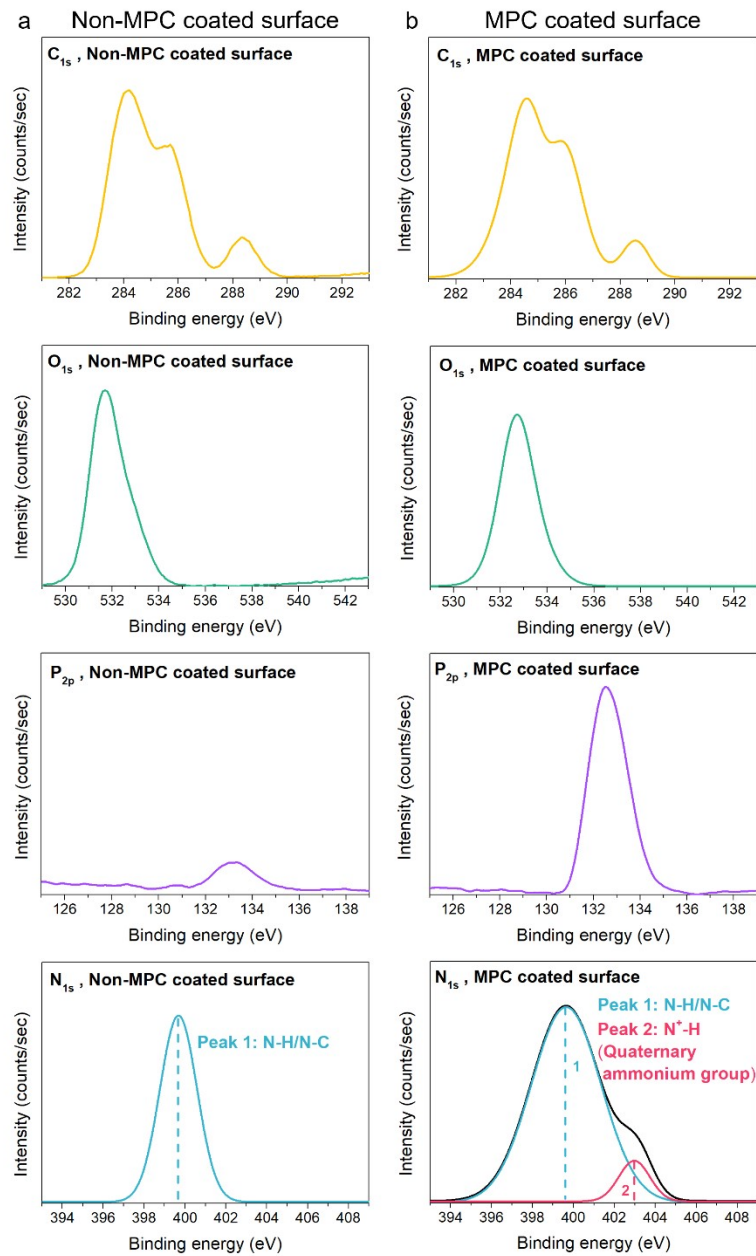
**Figure S1.** Cross-section view of the fabricated antibacterial film (total film thickness: approximately 118 μm, PET film: 100 μm, and PUA layer approximately 18 μm).



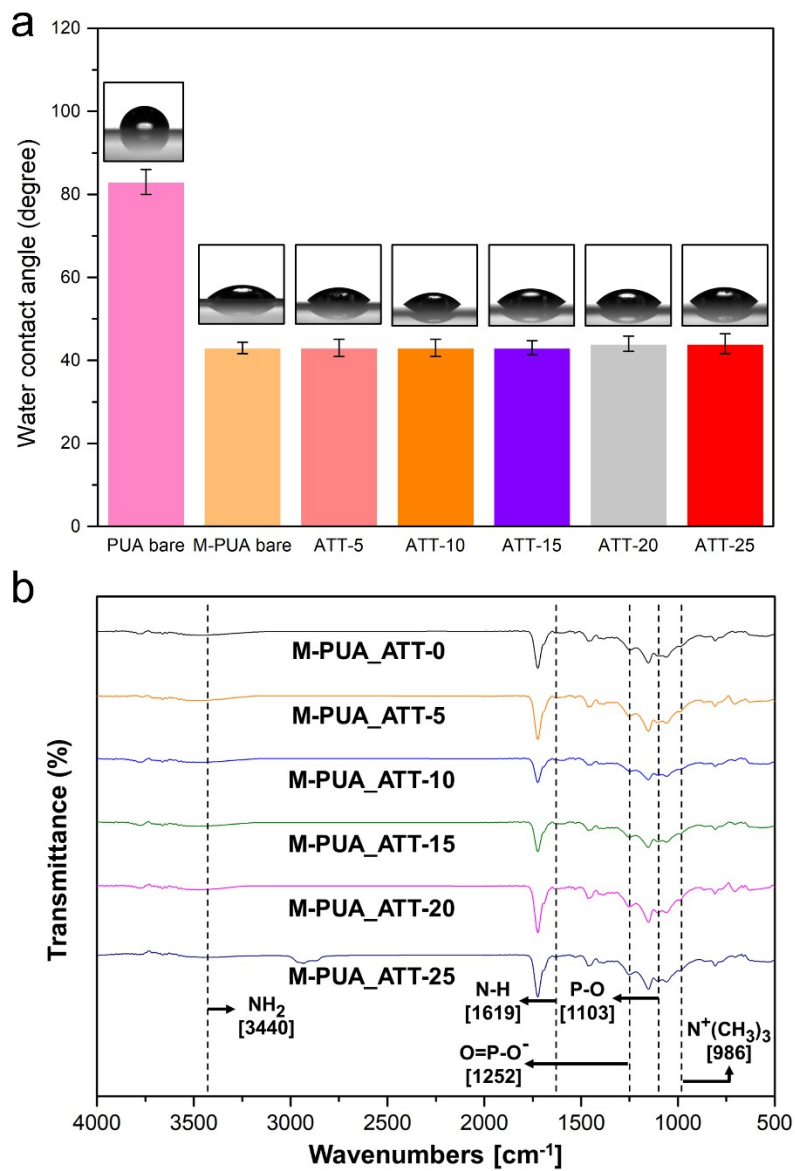
**Figure S2.** Mechano-bactericidal and mechano-bacteriostatic evaluation of nanopillar (diameter: 500 nm and spacing: 300 nm) and nanohole (diameter: 1000 nm and spacing 500 nm) patterns against *S. aureus*. (a-i and b-i) Fluorescence image (green: live bacteria and red: dead bacteria) and (a-ii and b-ii) SEM images.



**Figure S3.** Low magnification SEM images of *S. aureus* in nanohole film (“H\_1,” diameter: 1000 nm and spacing: 500 nm). The red box is a magnified SEM image of the “H\_1” film. The yellow arrow in the magnified “H\_1” image shows the line for binary fission of *S. aureus* grown for 18 hr.

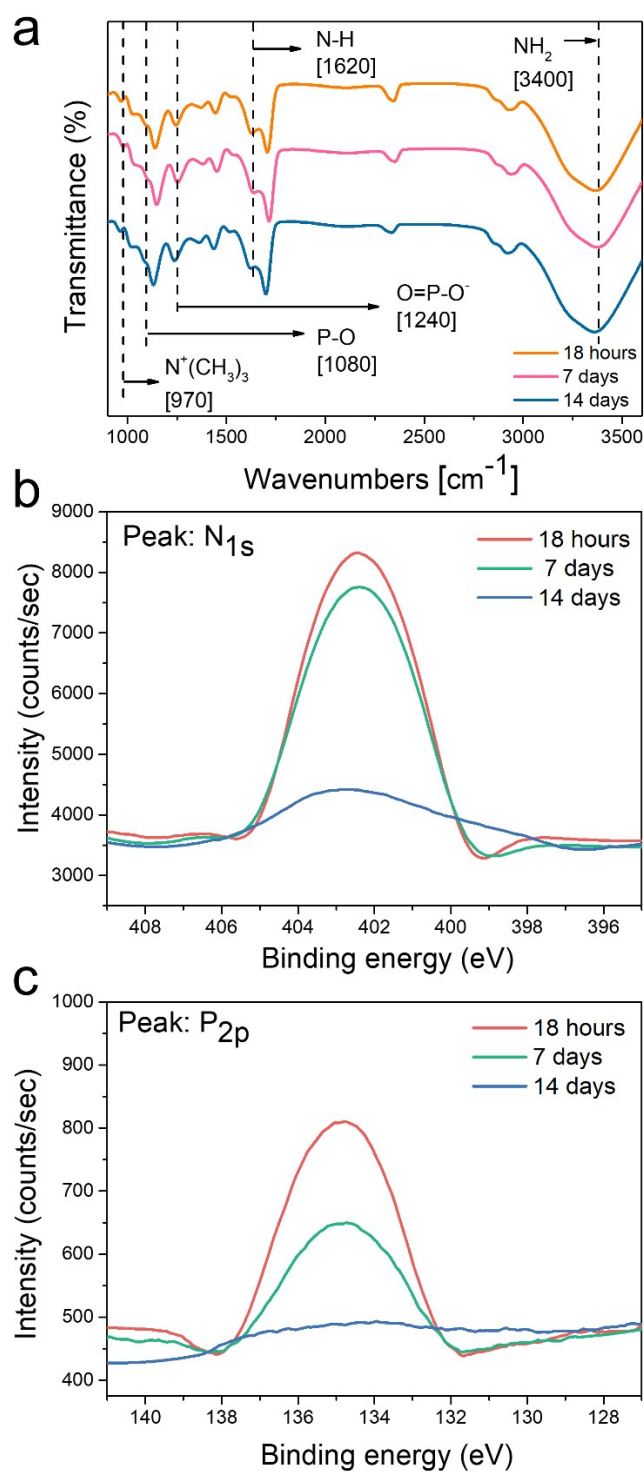


**Figure S4.** XPS spectra of (a) non-MPC coated surface and (b) MPC coated surface.



**Figure S5.** Evaluation of MPC-coated surface mechanical durability properties using adhesive taping test (ATT). (a) Water contact angle result, and (b) FT-IR spectrum.





**Figure S6.** Evaluation of the chemical durability properties of MPC-coated surfaces exposed to LB medium for 18 hr, 7 days, and 14 days. (a) FT-IR spectrum and XPS results (b) N<sub>1s</sub> and (c) P<sub>2p</sub>).