

Supporting Information for

Preparation and application of patterned membranes

for wastewater treatment

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Table S1. Operating conditions of the continuous MBR.

Concentration of the mixed liquor-suspended solids (MLSS)	6500 (± 100) mg / L
Hydraulic retention time (HRT)	8 hr
Solid retention time (SRT)	30 days
Temperature of reactor	20–28 °C
pH	7.0–7.5
Working volume	1.5 L
COD removal efficiency	98 %
Flux	12 L/m ² /h
COD of synthetic feed	500-550 ppm

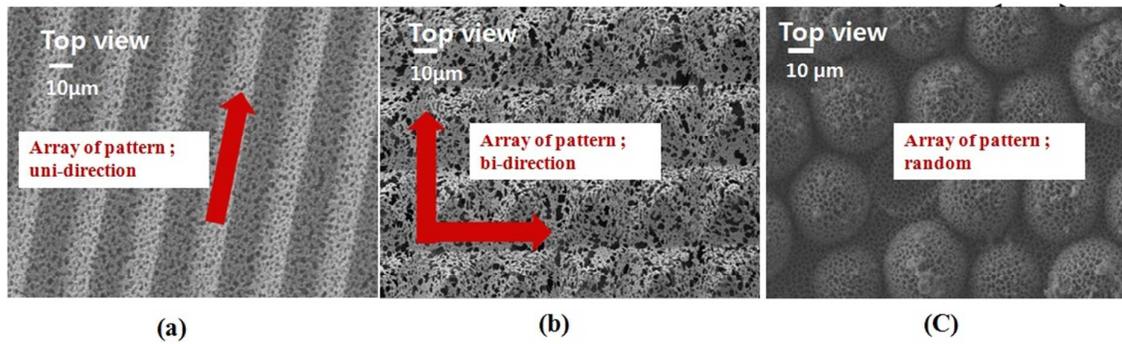


Figure S1. SEM images of diverse patterned membrane (a) prism type, (b) pyramid type and (c) embossing type

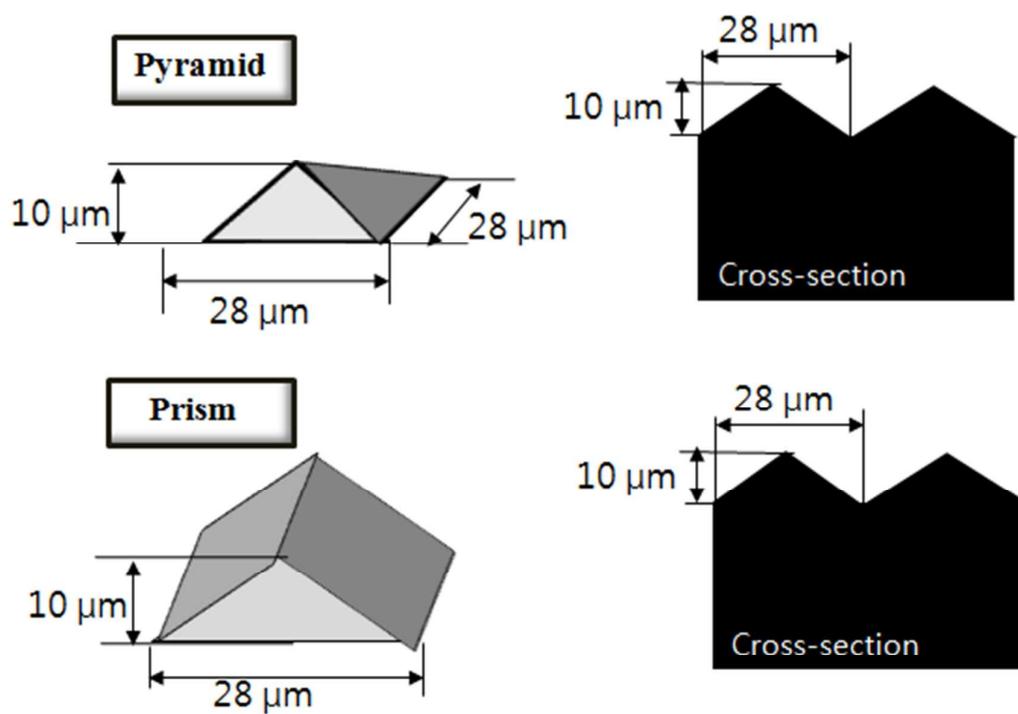
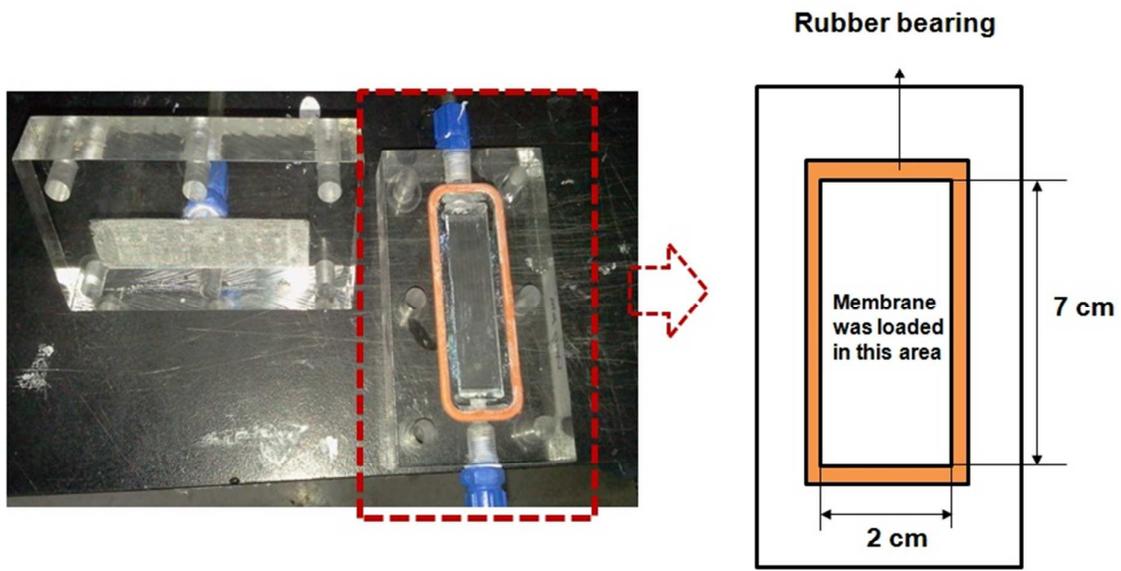
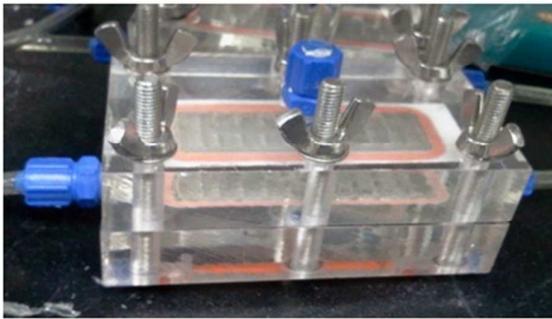


Figure S2. Characteristics of two types of patterned membranes.



(a)



(b)

Figure S3. Schematic diagram and photos of the test module. (a) Two pieces consisting of the test module, (b) Constructed form of the test module as a whole unit.

Why is the pore size of valley region is larger than the hill region of the prism-patterned membrane in Fig. 5-c ?

The difference in pore size between two regions might be caused by the difference in the local polymer concentration during the coagulation. Also, this difference of the local polymer concentration might be concerned with the intensity of interaction between polymer and PDMS surface. As shown in Fig. A5, the polymer placed near the valley region is in contact with the PDMS surface at one site. In contrast, the polymer located near the hill region is in contact with PDMS surface at two sites. Hence, the Van Der Waals force between polymer and PDMS surface (hydrophobic- hydrophobic interaction) near the hill region would be greater than that near the valley region. Because of this higher interaction, during coagulation the higher polymer concentration would be maintained near the hill region than at the valley region. It could make difference in pore size between two sites. ”

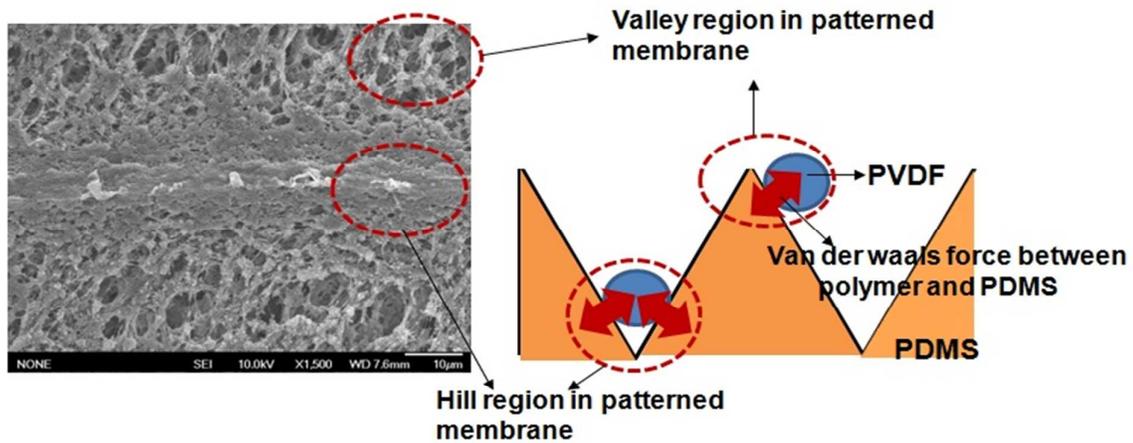


Figure S4. Difference in the pore size at hill and valley regions of the prism-patterned membrane.