

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: It shows the self-alignment procedure for the LED circuit.

File Name: Supplementary Movie 2

Description: It shows the detailed experimental results related to Fig. 7a.

File Name: Supplementary Movie 3

Description: It shows the directional omniphobicity of the membrane.

File Name: Supplementary Movie 4

Description: It shows the separation of chloroform and water using the membrane.

File Name: Supplementary Movie 5

Description: It shows the directional omniphilicity of the membrane.