

## Supporting Information

### Highly efficient forward osmosis based on porous membranes - applications and implications

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46 **S1. Optical micrograph of oil/water emulsion**

47 Fig. S1 shows a typical optical micrograph of the oil/water emulsion, observed using  
48 a digital microscope (VHX-500F, KEYENCE, United States of America). In the  
49 current study, most of the size of oil droplets ranged from 10 – 50  $\mu\text{m}$  for the O/W  
50 system and 5-30 O/W/S  $\mu\text{m}$  for the o/w/s system.  
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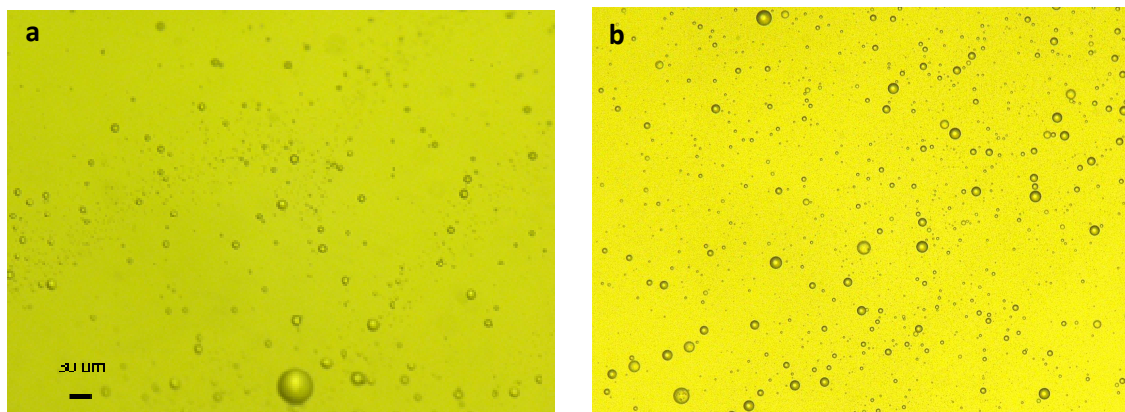
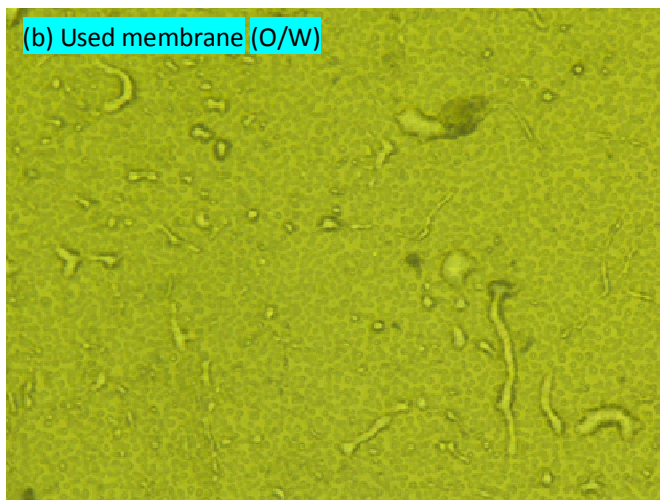
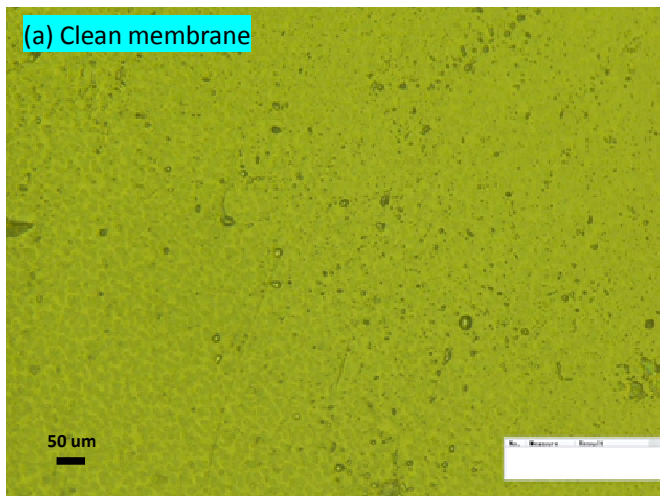


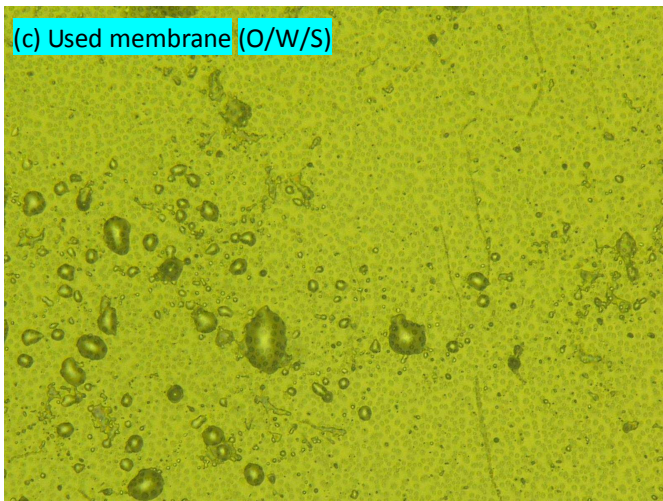
Figure S1. An optical micrograph of (a) mixture of oil and water (O/W); (b) mixture of oil, water, and SDS (O/W/S).

54 **S2. Micrographs of the porous UF-like FO membrane**

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56 Figure S2 shows the optical micrographs of a clean membrane and a used membrane  
57 after oil/water separation. No discernable change of the membrane surface was  
58 observed, suggesting that the membrane has good antifouling properties against the  
59 oil/water emulsion or oil/water/surfactant emulsion.  
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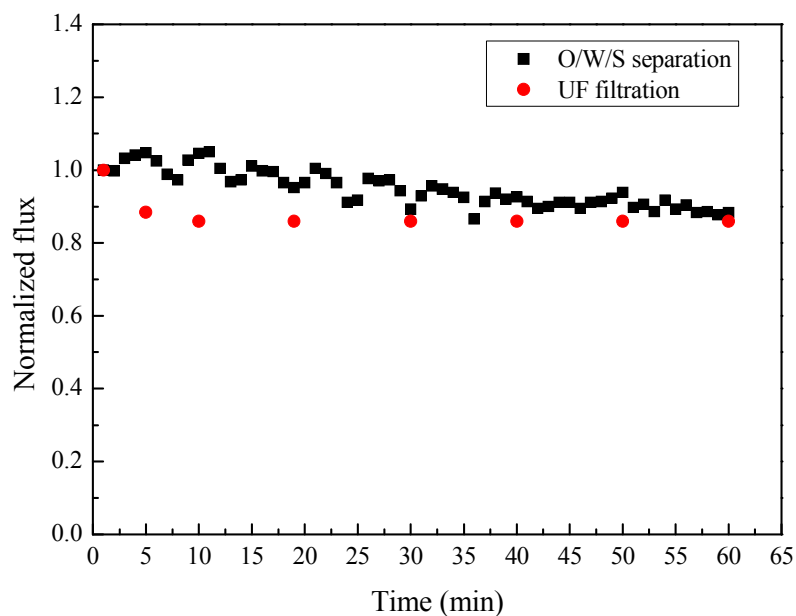


**Figure S2. Optical micrographs of the porous UF-like FO membrane. (a) A clean membrane, (b) a used membrane after oil/water separation and gently rinsed with DI water and (c) a used membrane after oil/water/surfactant separation and gently rinsed with DI water.**

### 67 S3. Comparison of UF and porous-FO fouling

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69 Figure S3 shows compares the flux behavior of the same porous UF membrane under  
70 FO testing and UF testing. To ensure a fair comparison, the applied pressure in the UF  
71 testing was adjusted to achieve a similar initial flux to FO testing. In the current study,  
72 UF experienced fast flux decline compared to FO, especially during the initial stage.  
73 Comparable flux was observed towards the end of the tests.



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75 **Figure S3. Comparison of UF and porous-FO fouling.**

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