



Supplementary Material

Rational design of PDA/P-PVDF@PP Janus membrane with asymmetric wettability for switchable emulsion separation

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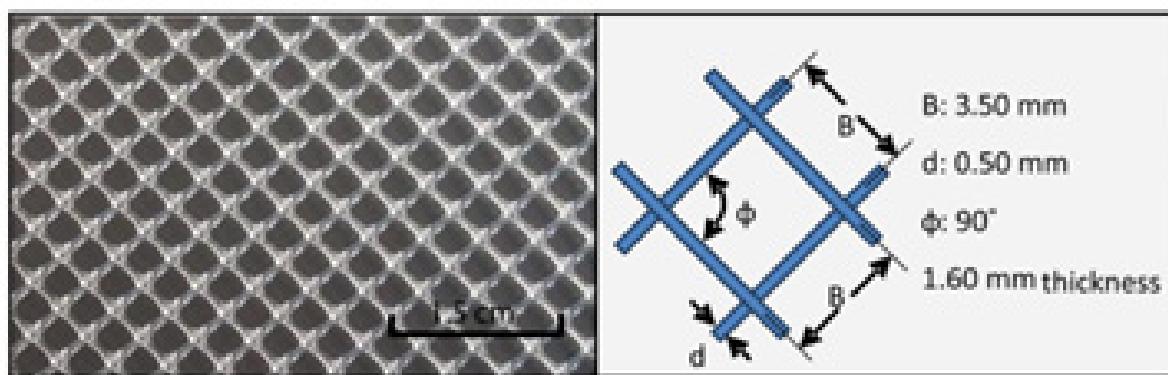


Figure S1. The illustration of rhombus mesh spacer.

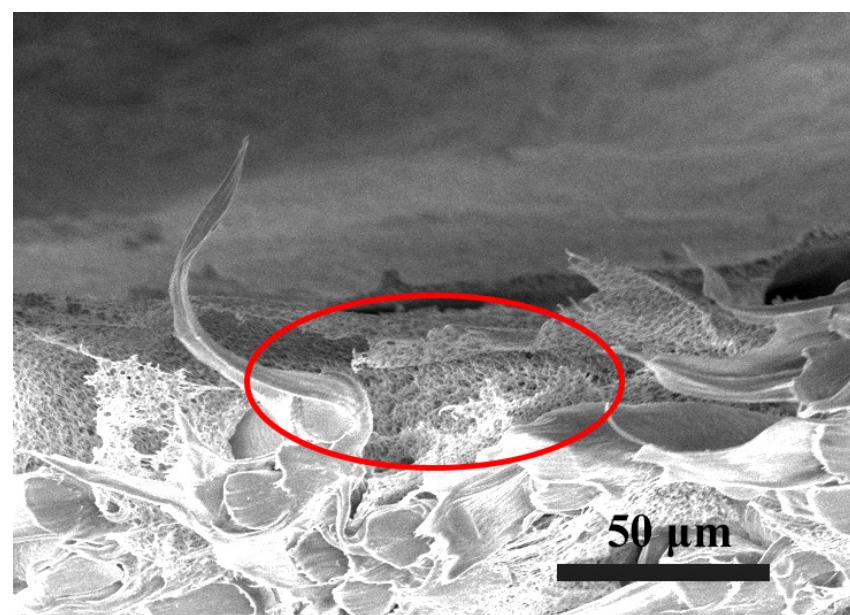


Figure S2. The cross-sectional image of the P-PVDF@PP membrane.

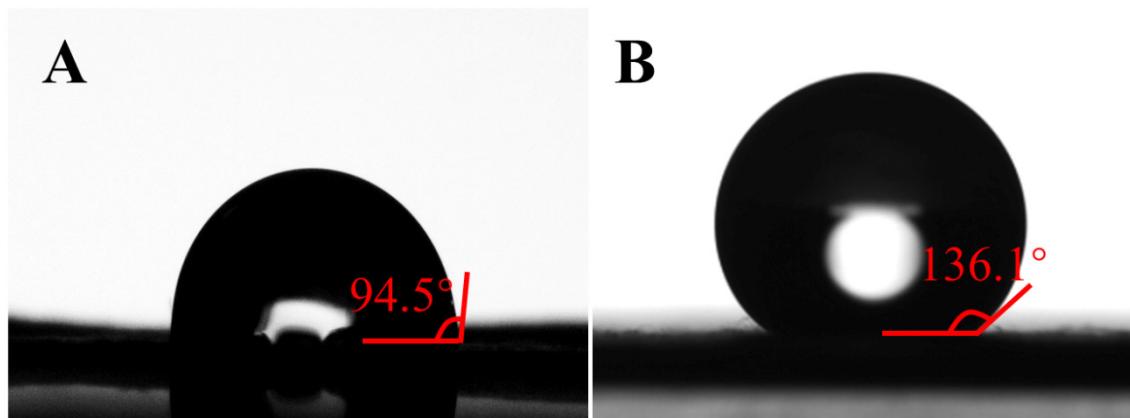


Figure S3. The water contact angle of (A) PVDF@PP membrane and (B) P-PVDF@PP membrane.

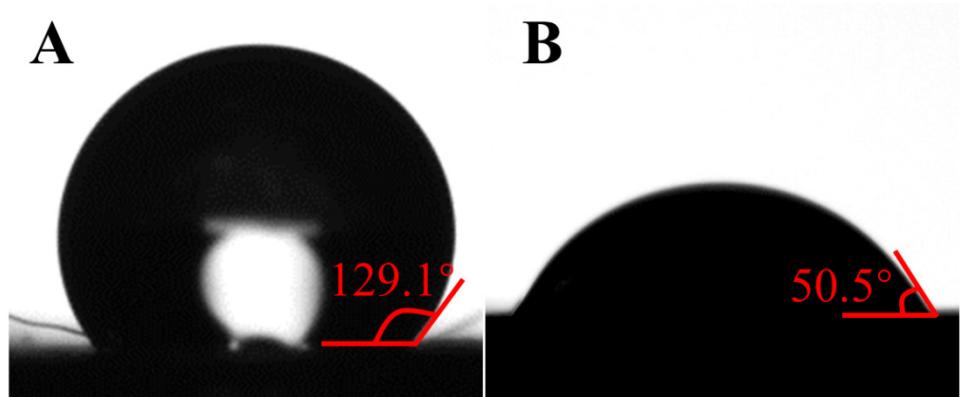


Figure S4. The water contact angle of (A) PP substrate and (B) PDA/P-PVDF@PP/PDA membrane.

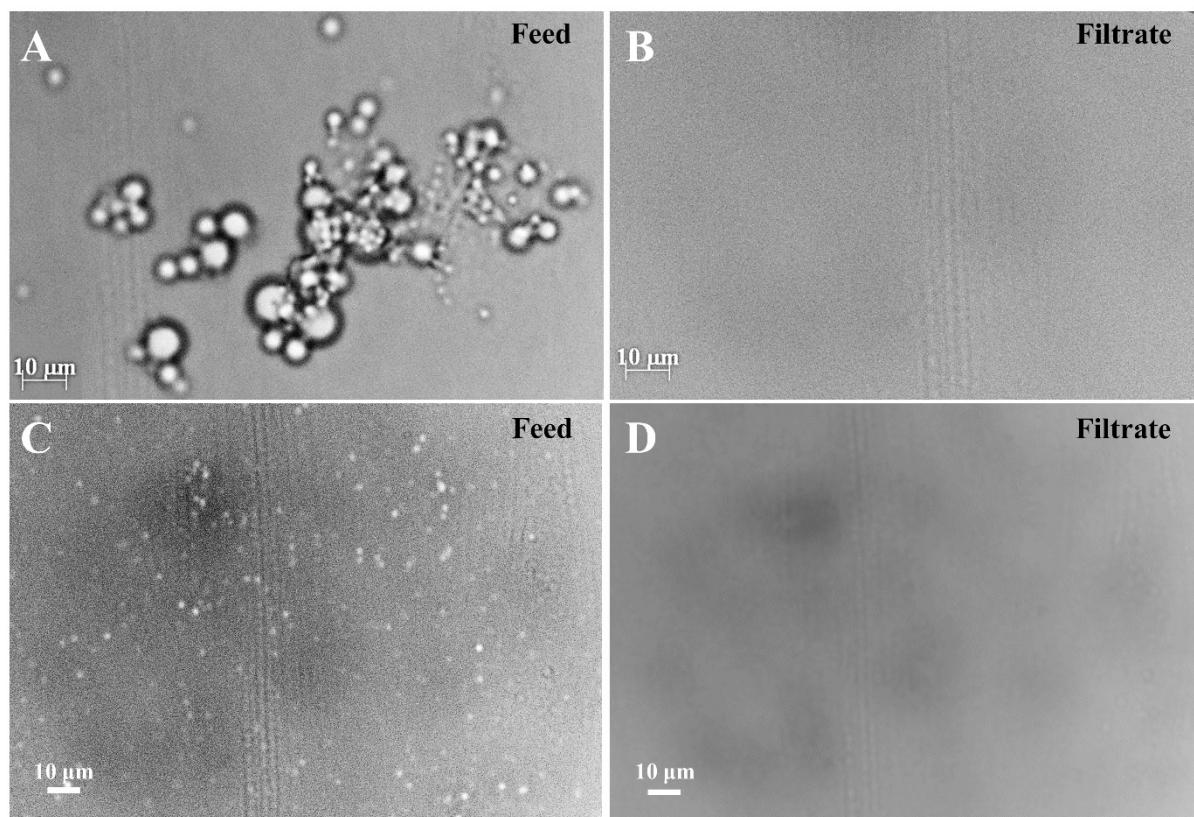


Figure S5. Photographs of the surfactant-stabilized (A-B) n-octane-in-water emulsion and the corresponding filtrate, (C-D) water-in-oil emulsion, and the corresponding filtrate.

Table S1. Comparison of emulsion separation membrane performance with different studies.

Membranes	Method	O/W	W/O	Ref
Janus-PVDF	Thiol-ene click reaction	$\eta = 97.5\%$	$\eta = 98.5\%$	[1]
PDA/PEI/PVDF/SiO ₂	Thermally induced phase separation; spray coating	$\eta \geq 94.0\%$	$\eta \geq 97.0\%$	[2]
Janus F-TiO ₂ @PPS	Interfacial grafting	$\eta \geq 98.0\%$	$\eta \geq 98.0\%$	[3]
P(GMA-co-mPEGMA)-coated PVDF membrane	Spray-coating	$\eta = 99.0\%$	/	[4]
γ -Fe ₂ O ₃ @PVDF/CuO	Chemical oxidation; electrospraying	$\eta \geq 99.0\%$	$\eta \geq 98.5\%$	[5]
PDA/P-PVDF@PP Janus membrane	Spacer-assisted NIPS; in situ deposition; peeling-off	$\eta \geq 95.0\%$ $\eta \geq 99.5\%$	(heavy oil); $\eta \geq 99.0\%$	This work (light oil)

References

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