

Supplementary Information for

**Stable underwater superoleophobic conductive polymer coated  
meshes for high-efficiency oil-water separation**

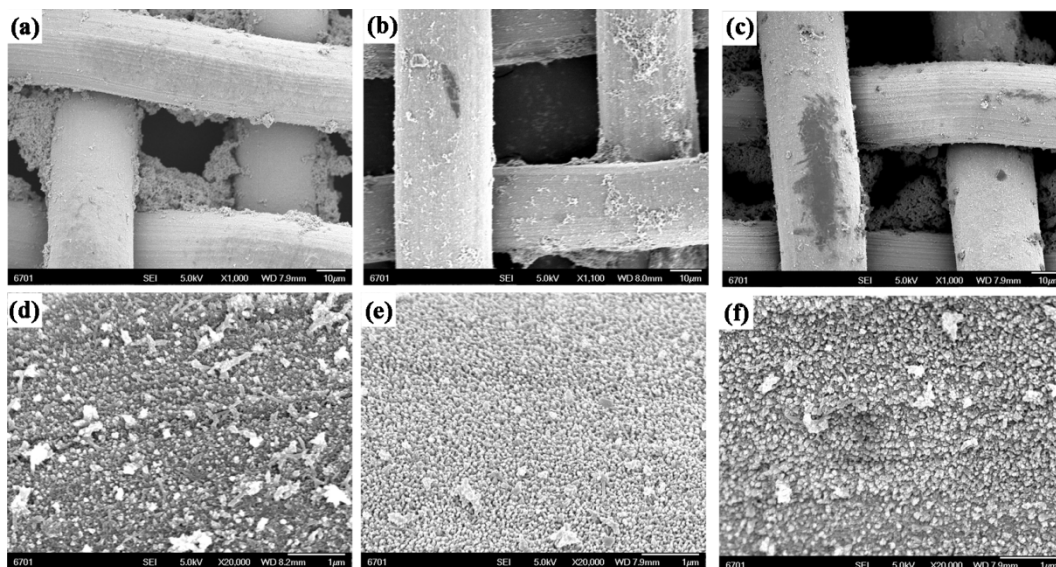
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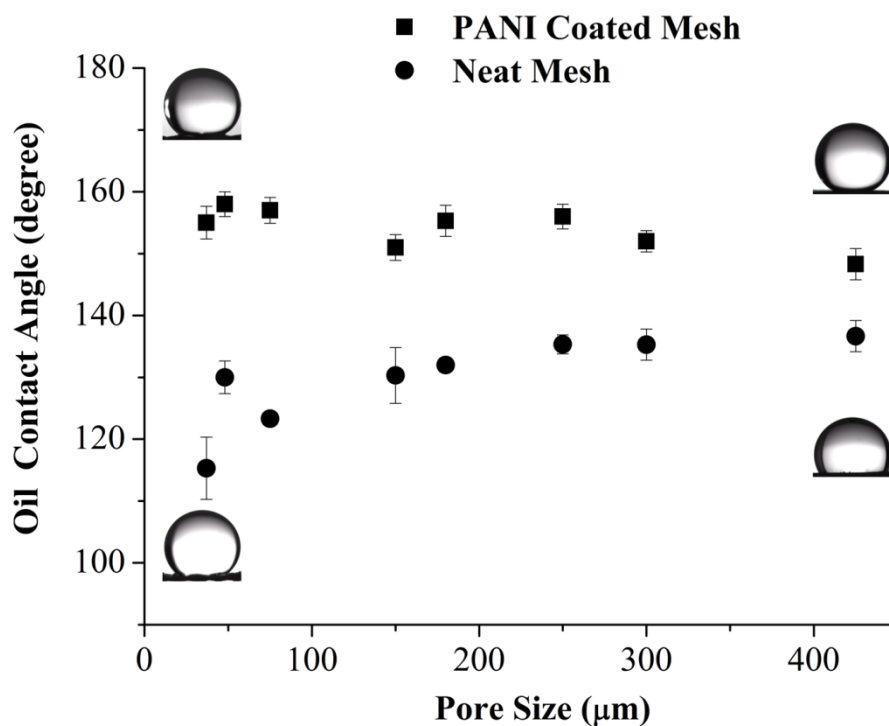
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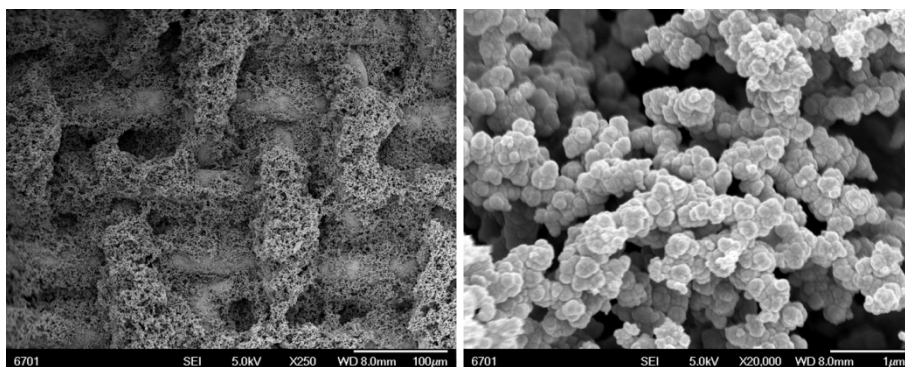
## Supplementary Figures



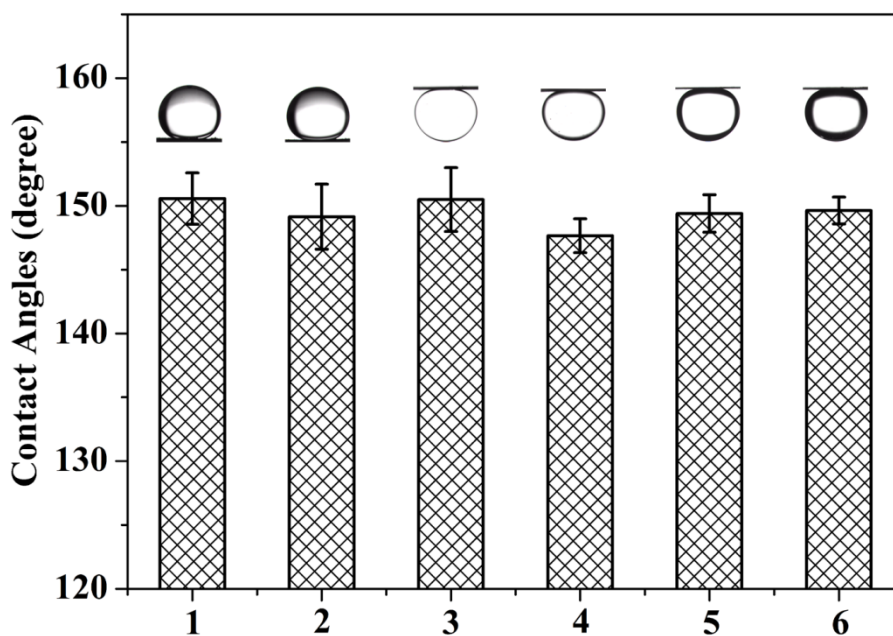
**Fig. S1** SEM images at different magnifications of PANI coated meshes (400 mesh size) prepared in  $\text{H}_2\text{SO}_4$  (a, d),  $\text{HCl}$  (b, e) and  $\text{HNO}_3$  (c, f).



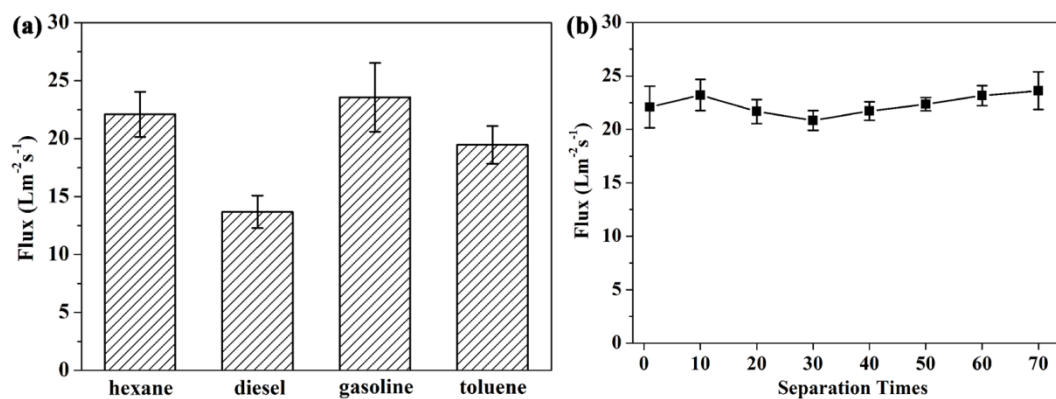
**Fig. S2** Oil contact angles of neat and PANI coated meshes with different pore diameters. The oil droplet is dichloroethane.



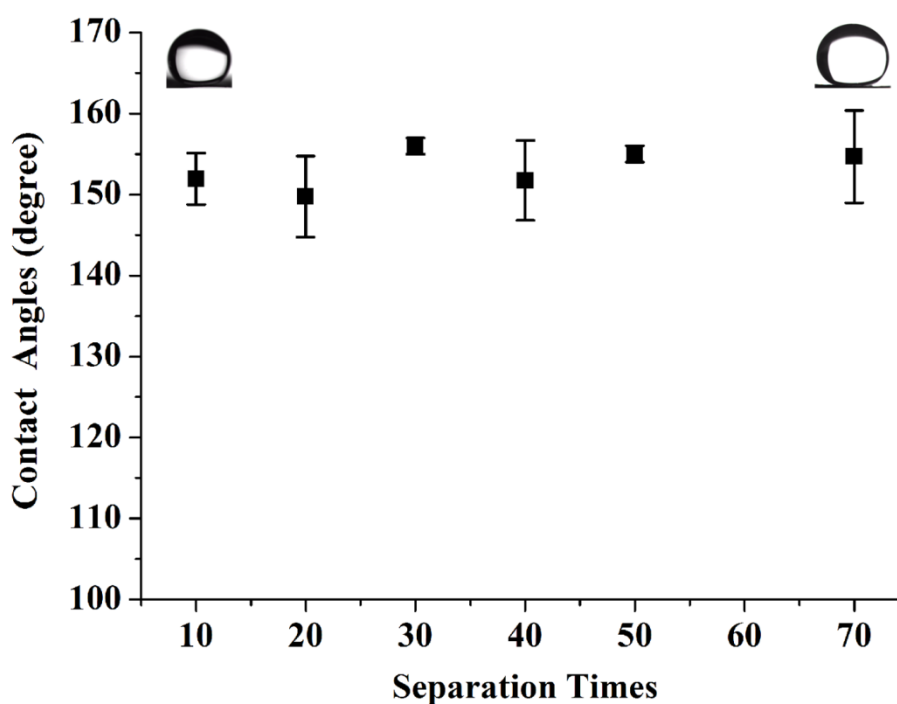
**Fig. S3** SEM images of PPy coated meshes (400 mesh size) at different magnifications.



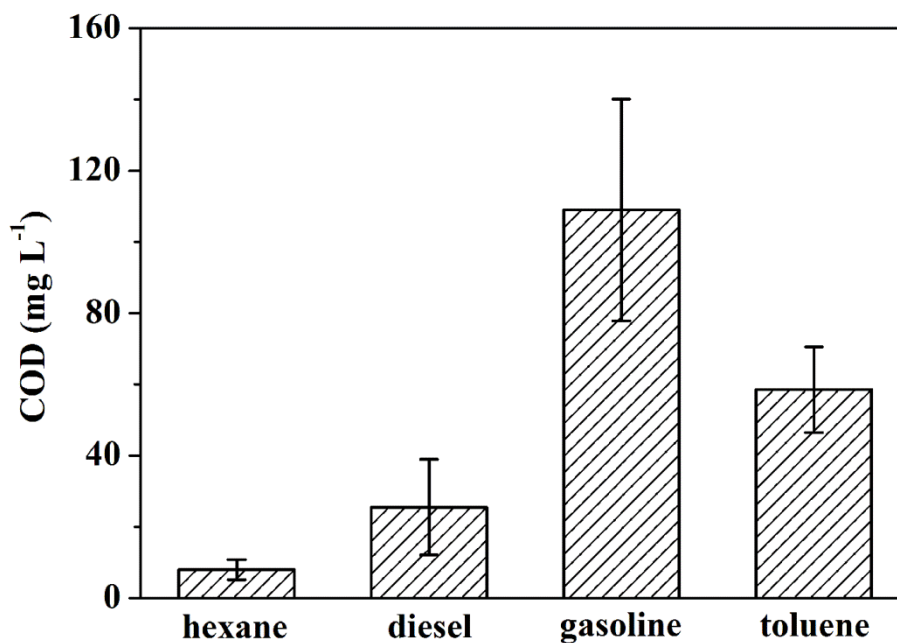
**Fig. S4** Underwater OCAs of PPy coated meshes (400 mesh size). 1-6 represents dichloroethane, chloroform, hexane, gasoline, diesel, toluene, respectively. The insets are the typical photographs of oil droplets on the PPy coated meshes.



**Fig. S5** (a) Water flux of oil-water separation. (b) Effect of separation times on water flux. Water fluxes were determined by calculating the volume of water permeation in unit time using the following equation:  $\text{flux} = V/St$ , where  $V$  is the volume of water permeation,  $S$  is the valid area of the films, and  $t$  is the testing time.



**Fig. S6** The relationship between dichloroethane contact angles of PANI coated meshes (400 mesh size) and the separation cycles. The insets show the dichloroethane droplets on PANI coated meshes after 10 and 70 cycles of oil-water separation.



**Fig. S7** Oil contents (COD) in filtrates after the separation of water and oils.

#### **Supplementary Movies**

**Movie S1** A dichloroethane droplet rolls off the sloping surface of a PANI coated mesh (40 mesh size) in aqueous solution.

**Movie S2** A hexane droplet rolls along the surface of a PANI coated mesh (400 mesh size) in 1 M NaCl solution.

**Movie S3** Oil-water separation by a PANI coated mesh (400 size mesh).