
Supporting Information

UV-driven anti-fouling paper fibers membranes for efficient oil-water separation

Yangyang Chen^a, Atian Xie^a, Jiuyun Cui^b, Jihui Lang^c, Yongsheng Yan^a, Chunxiang Li^{a*}, Jiangdong Dai^{a*}

^aInstitute of Green Chemistry and Chemical Technology, School of Chemistry and Chemical Engineering, and ^bSchool of Materials Science and Engineering, Jiangsu University, Zhenjiang 212013, China

^cCollege of Physics, Jilin Normal University, Siping 136000, China

*Corresponding Author

E-mail: lcx@mail.ujcs.edu.cn; Daijd@mail.ujcs.edu.cn

Tel: +86 0511-88790683; Fax: +86 0511-88791800

Table S1. Comparison of this paper and others.

Materials	Separation efficiency	Cost	Cycles of use	Toxicity	Complexity	Ref.
Stainless steel mesh	>97%	High cost	20 times	Non-toxicity	easy	Appl. Surf. Sci. 2017, 416, 344-352.
Stainless steel mesh	/	High cost	5 times	Non-toxicity	easy	Sci. Rep. 2013, 3, 2326
PVDF powder	>99.97%	High cost	10 times	Non-toxicity	complex	J. Mem. Sci. 2012, 401-402, 132-143
Hard/soft substrates	/	Low cost	800 times	High-toxicity	complex	J. Mem. Sci. 2011, 385, 251-262
Cellulose acetate membrane	/	Low cost	/	Non-toxicity	easy	Chem. Eng. J. 2014, 237, 70-80
Paper	>99%	Low cost	80 times	Non-toxicity	easy	This paper

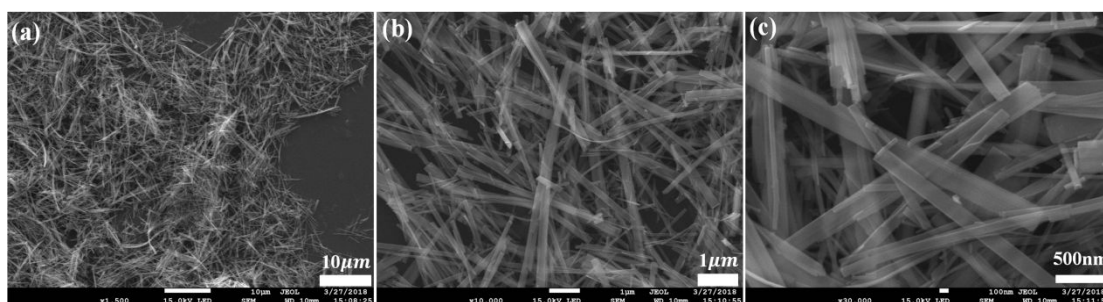


Fig. S1. SEM images of TiO₂ nanowires.

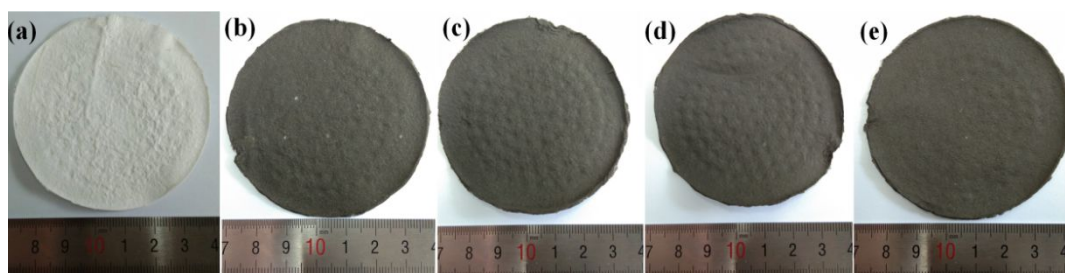


Fig. S2. Photographs of PF and PF@PDA@TiO₂-X: (a) PF, (b) PF@PDA, (c) PF@PDA@TiO₂-2, (d) PF@PDA@TiO₂-4 and (e) PF@PDA@TiO₂-6.

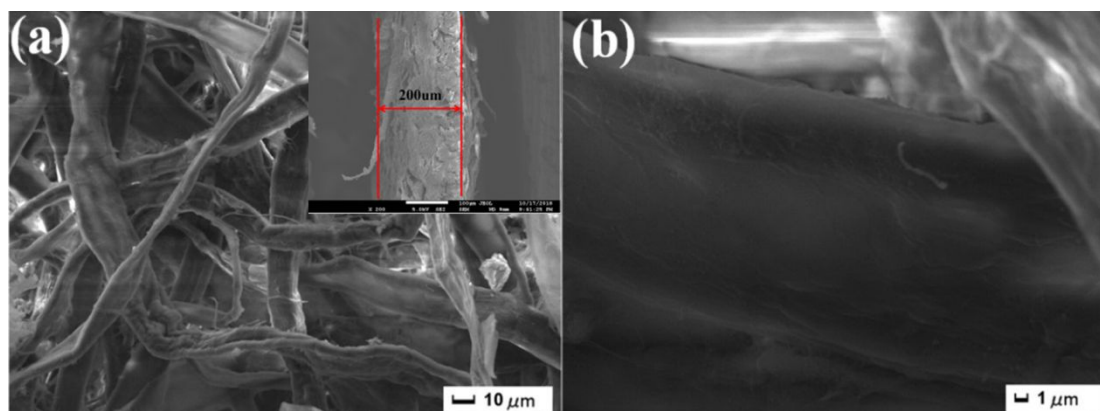


Fig. S3. SEM images of PF.

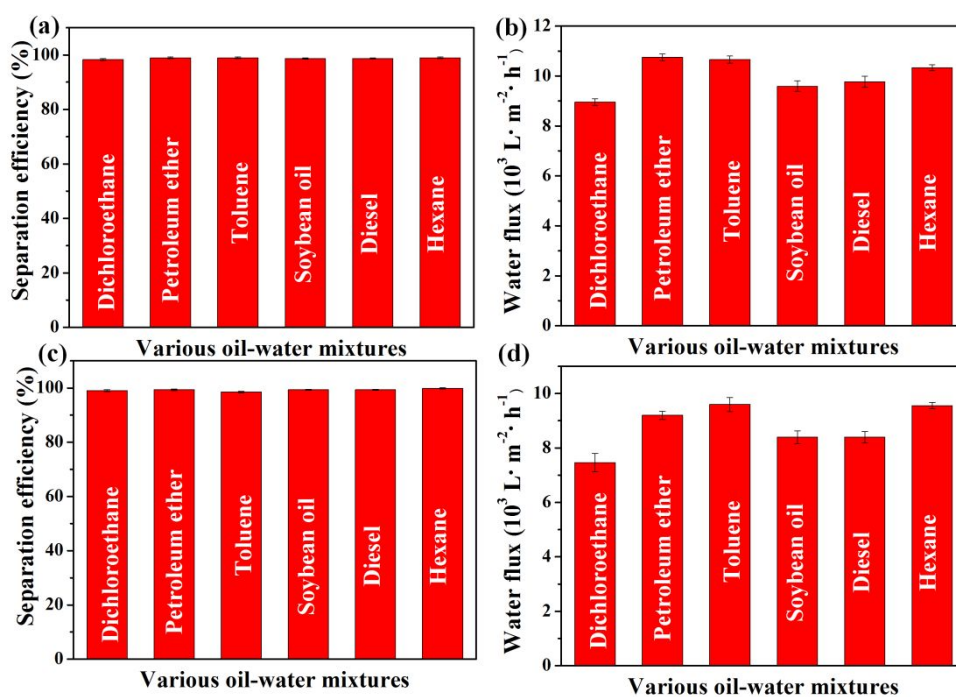


Fig. S4. Separation efficiency and water flux for a series of oil-water mixtures: (a), (b)

PF@PDA@TiO₂-2, (c), (d) PF@PDA@TiO₂-6.

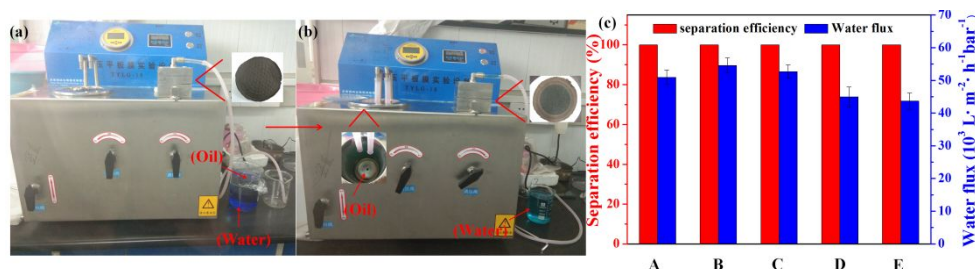


Fig. S5. Photographs of oil (colorless)-water (blue) cross-flow filtration device (a,b); Separation efficiency and water flux of PF@PDA@TiO₂ for different oil-water mixtures(c). (A-E represent hexane, petroleum ether, , toluene dichloroethane, soybean oil and water mixtures)

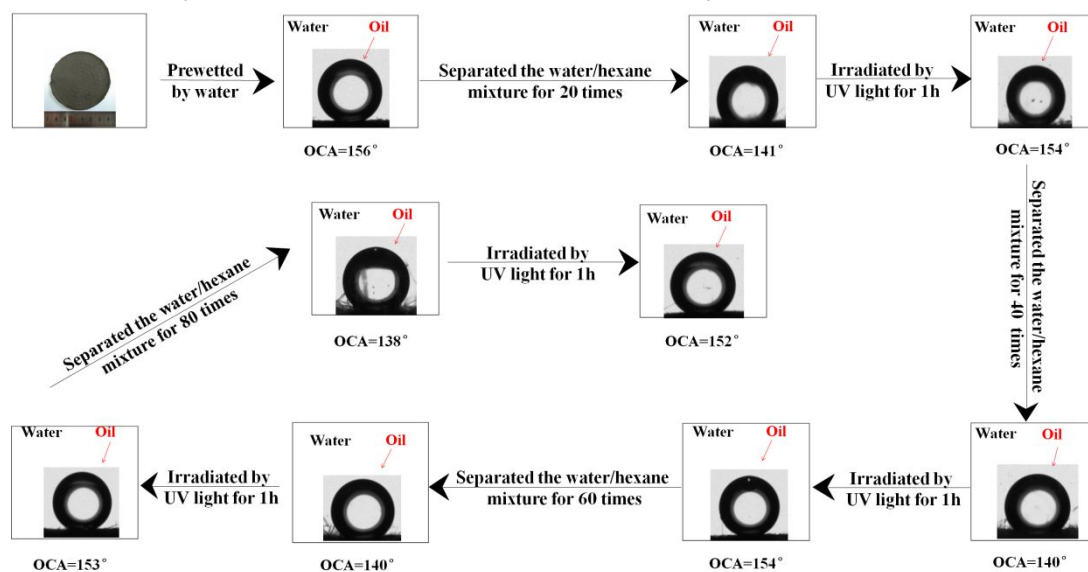


Fig. S6. An intuitive process diagram of OCAs underwater in 80 times oil-water separations.



Fig. S7. The flexibility of PF@PDA@TiO₂.

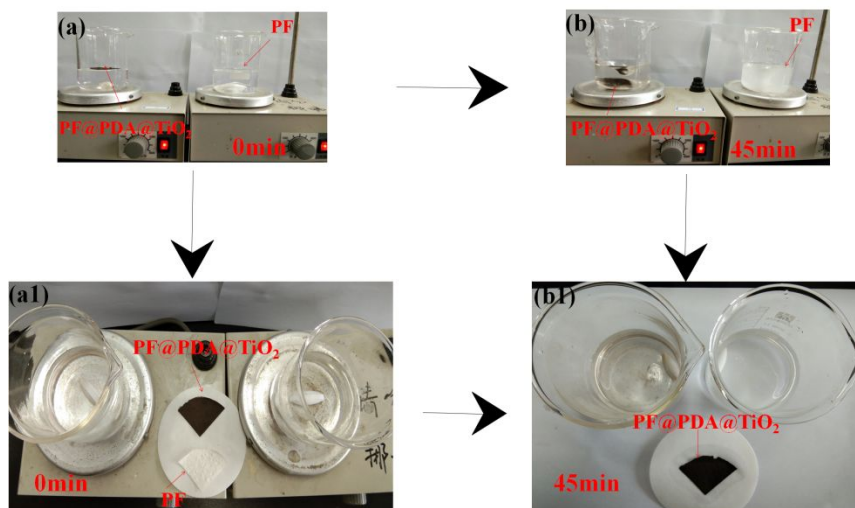


Fig. S8. The durability of PF and PF@PDA@TiO₂: (a) The original state and (a1) magnifying state of PF and PF@PDA@TiO₂ before stirring, (b) The original state and (b1) magnifying state after stirring 45 min.