Supporting Information

High-efficiency ultrafiltration nanofibrous membrane with remarkable antifouling and antibacterial ability

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SF 1. FT-IR spectra of nanofibrous membranes with the different addition amounts of \( \alpha \)-PPTA.
SF 2. Energy dispersive spectrometer (EDS-SEM) analysis of elements distribution on the modified PVDF membranes with 20 wt% f-PPTA: (a) original micrograph, (b) C element distribution, (c) N element distribution, (d) O element distribution, (e) F element distribution and (f) relative abundances of these elements.
SF 3. Energy dispersive spectrometer (EDS-TEM) analysis of elements distribution on nanofiber of the modified PVDF membranes with 20 wt% f-PPTA: (a) original micrograph, (b) C element distribution, (c) F element distribution, (d) O element distribution, (e) N element distribution and (f) C and O elements distribution. (g) relative abundances of these elements.
SF 4. Nanofibers diameter distribution of membranes with the different addition amounts of \( f \)-PPTA: (a) Neat PVDF, (b) PVDF-2 wt\% \( f \)-PPTA, (c) PVDF-5 wt\% \( f \)-PPTA, (d) PVDF-10 wt\% \( f \)-PPTA, (e) PVDF-15 wt\% \( f \)-PPTA and (f) PVDF-20 wt\% \( f \)-PPTA.
SF 5. AFM three-dimensional surface images of membranes in tapping mode: (a) PVDF; (b) PVDF with 2 wt% f-PPTA; (c) PVDF with 5 wt% f-PPTA; (d) PVDF with 10 wt% f-PPTA; (e) PVDF with 15 wt% f-PPTA; (f) PVDF with 20 wt% f-PPTA. (RMS a. 49.807 nm, b. 53.293 nm, c. 53.481 nm, d. 56.441 nm, e. 56.640 nm, f. 61.735 nm)
**SF 6.** XPS spectra of the neat PVDF membrane. (a) Survey and (b) C1s.
**SF 7.** Pore diameter distribution of neat PVDF and modified PVDF with the different addition amounts of \( f \)-PPTA.
SF 8. EDS analysis of the modified membrane with 20 wt% f-PPTA before operation and after operation 24 h with pure water under 0.2 Mpa. (a) before operation approximately 20.057 wt% f-PPTA, (b) after operation 24 h 19.897 wt% f-PPTA (The membrane after operation was dried in a vacuum oven at 60 °C for 24 h to eliminate the interference of water to oxygen element content before the EDS analysis test. This data excluded Pt surface plating peak ~ 5.4 keV)
SF 9. Optical images of bacteria on solid medium removal from different membranes. 
(a) Neat PVDF, (b) PVDF with 5 wt% f-PPTA, (c) PVDF with 10 wt% f-PPTA, (d) PVDF with 15 wt% f-PPTA, (e) PVDF with 20 wt% f-PPTA.