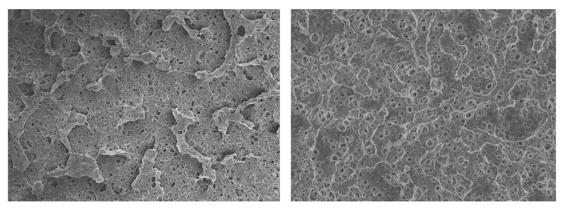


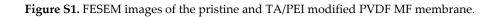


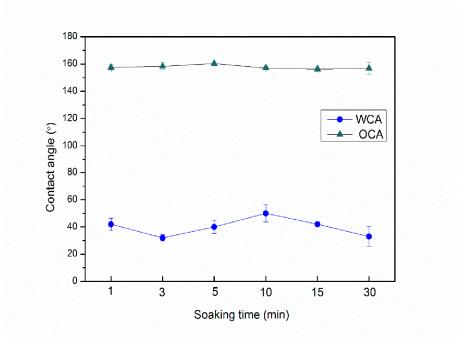
## A Stable Anti-Fouling Coating on PVDF Membrane Constructed of Polyphenol Tannic Acid, Polyethyleneimine and Metal Ion



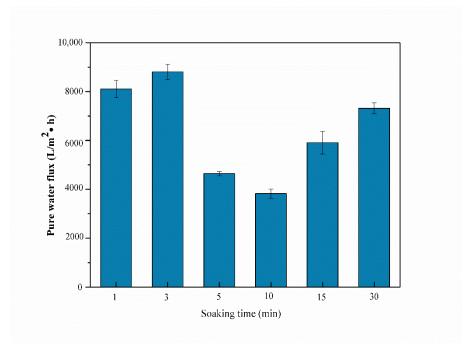
Pristine PVDF MF membrane

Membrane modified by TA/PEI

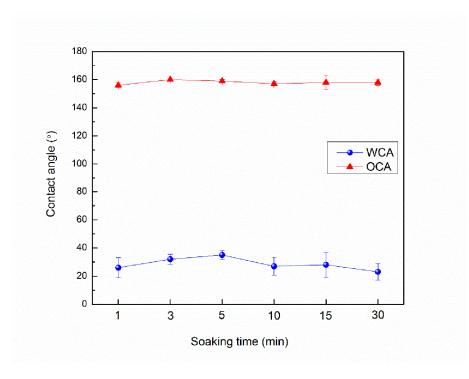




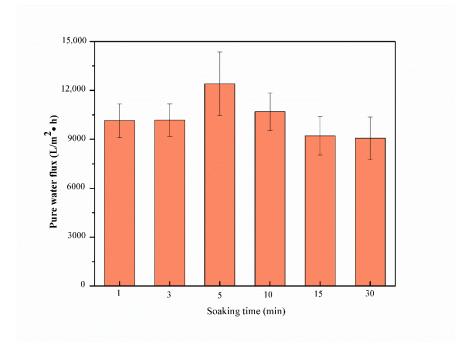
**Figure S2.** The influence of modification time of Zr<sup>4+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.



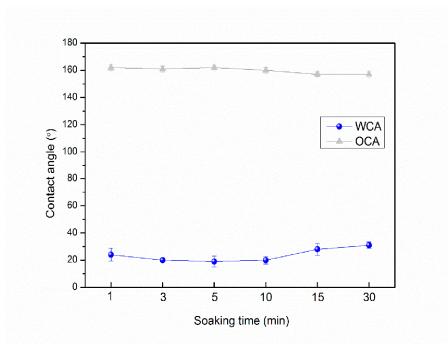
**Figure S3.** The influence of modification time of  $Zr^{4+}$  on WF of the TA/PEI/M modified PVDF MF membranes.



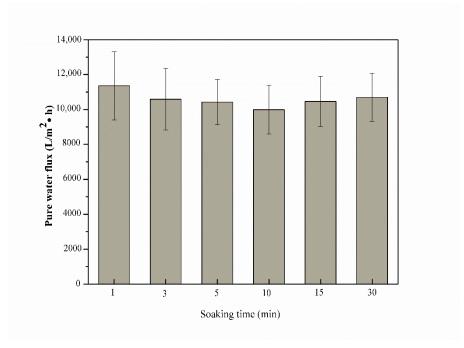
**Figure S4.** The influence of modification time of Fe<sup>3+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.



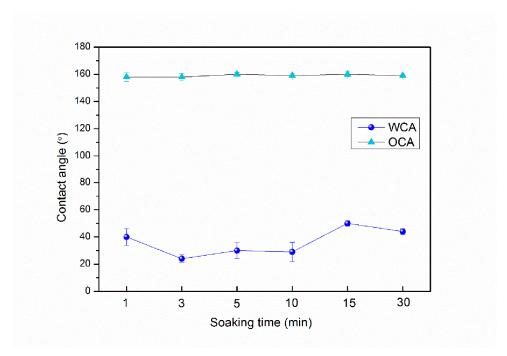
**Figure S5.** The influence of modification time of Fe<sup>3+</sup> on WF of the TA/PEI/M modified PVDF MF membranes.



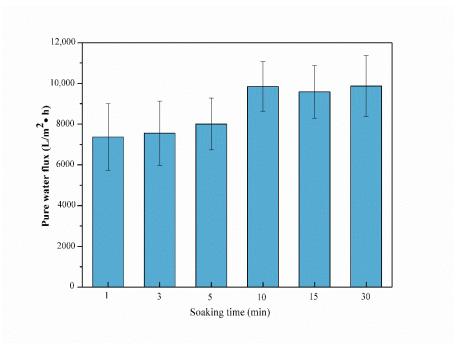
**Figure S6.** The influence of modification time of Al<sup>3+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.



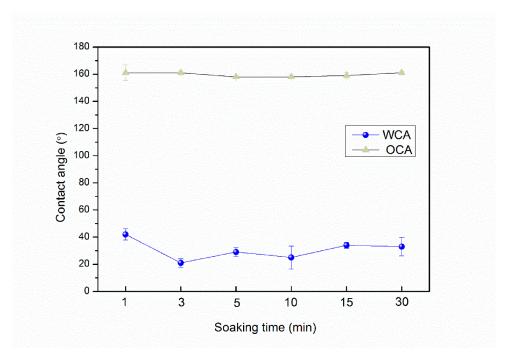
**Figure S7.** The influence of modification time of Al<sup>3+</sup> on WF of the TA/PEI/M modified PVDF MF membranes.



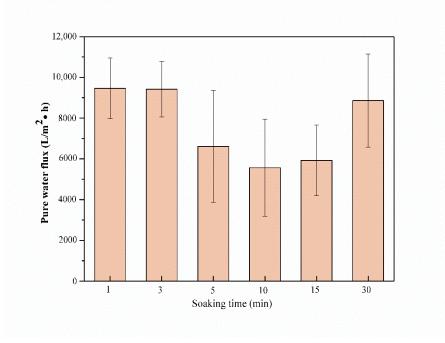
**Figure S8.** The influence of modification time of Cu<sup>2+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.



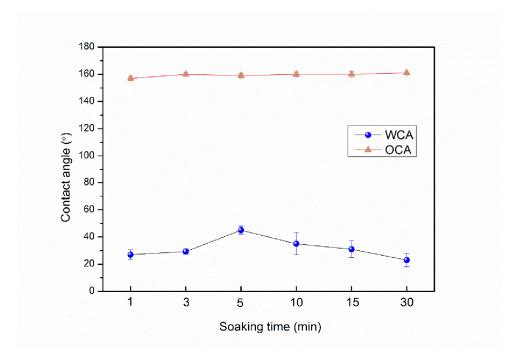
**Figure S9.** The influence of modification time of Cu<sup>2+</sup> on WF of the TA/PEI/M modified PVDF MF membranes.



**Figure S10.** The influence of modification time of Zn<sup>2+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.



**Figure S11.** The influence of modification time of Zn<sup>2+</sup> on WF of the TA/PEI/M modified PVDF MF membranes.



**Figure S12.** The influence of modification time of Mn<sup>2+</sup> on WCA and OCA of the TA/PEI/M modified PVDF MF membranes.

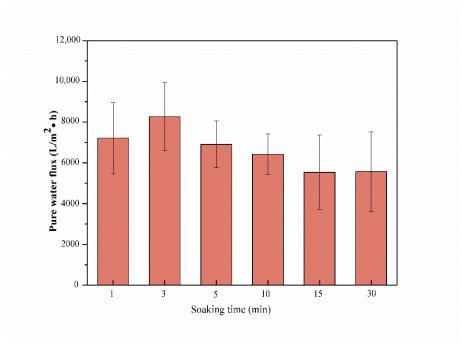


Figure S13. The influence of modification time of  $Mn^{2+}$  on WF of the TA/PEI/M modified PVDF MF membranes.