

## Supporting Information

### Mixed matrix membranes decorated with in situ self-assembled polymeric nanoparticles driven by electrostatic interaction

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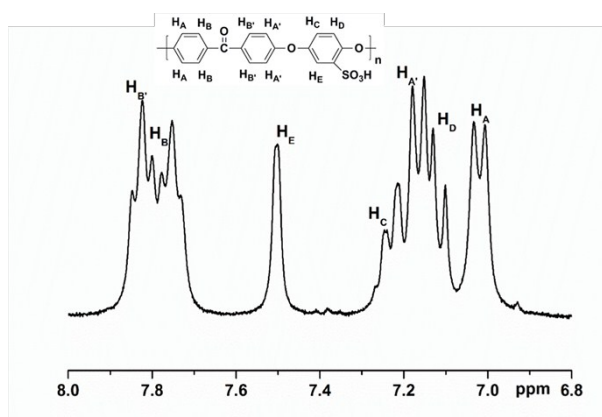


Fig. S1. <sup>1</sup>H NMR spectra of SPEEK.

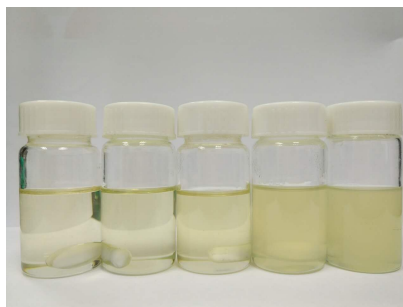


Fig. S2. Digital photo of the casting solution with increasing amount of polymeric nanoparticles (from left to right).

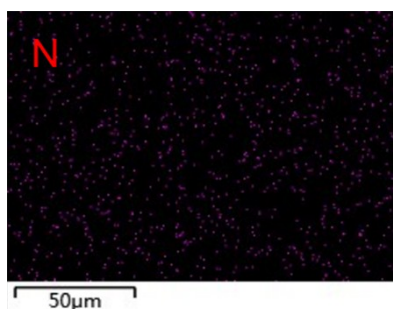
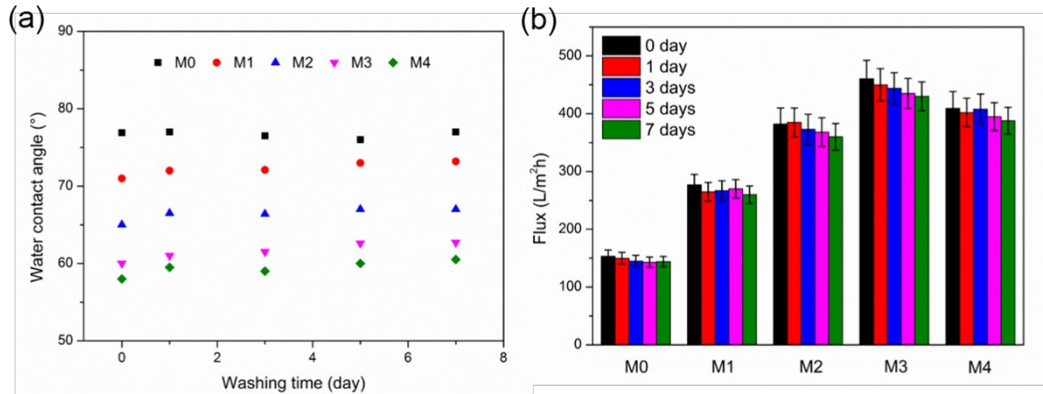
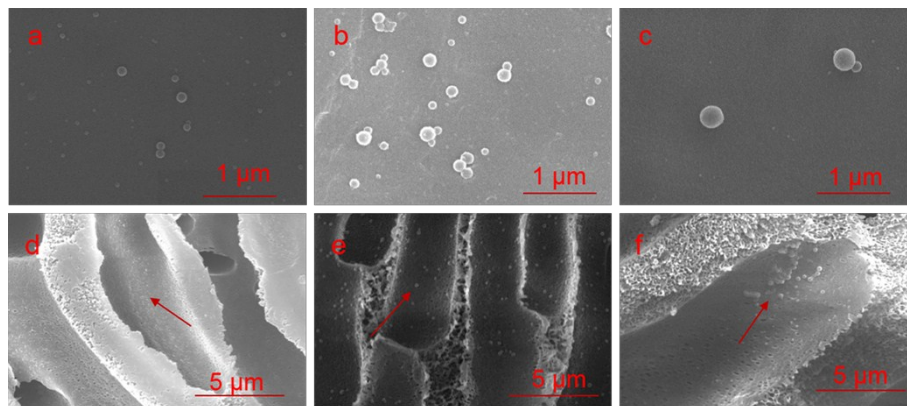


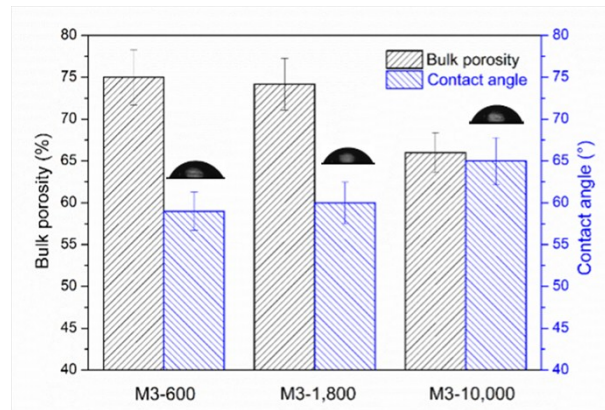
Fig. S3. EDX mapping of M3 mixed matrix membrane (top surface). The red dots indicate signals of N.



**Fig. S4.** (a) The water contact angle of the membranes with different washing time. (b) Water flux of the membranes after different washing time.



**Fig. S5.** SEM images of M3-600, M3-1,800 and M3-10,000 (a-c) top surface; (d-f) cross-section.



**Fig. S6.** (a) Bulk porosity and water contact angle of M3-600, M3-1,800 and M3-10,000 membranes.

**Table S1** The ultrafiltration performance of the prepared membranes and some reported membranes

Membrane	Permeability flux (L/m <sup>2</sup> h)	Rejection (%)	FRR (%)

M0/M3	153.1/460.4	95.9/97.1	60.7/89.0
PVDF/PNSM-3	165.7/672.8	100/100	97.9/93.7 <sup>1</sup>
M0/M1-30	7.11/99.82	56.5/11	46.98/51.65 <sup>2</sup>
PSf/(PPTA/PSf	100/400	98/46	-- <sup>3</sup>
8)			

## References

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- 2 J. H. Jiang, L. P. Zhu, H. T. Zhang, B. K. Zhu and Y. Y. Xu, *J. Membr. Sci.*, 2014, 457, 73–81.
- 3 Q. Shi, L. Ni, Y. F. Zhang, X. S. Feng, Q. H. Chang and J. Q. Meng, *J. Mater. Chem. A*, 2017, 5, 13610–13624.