



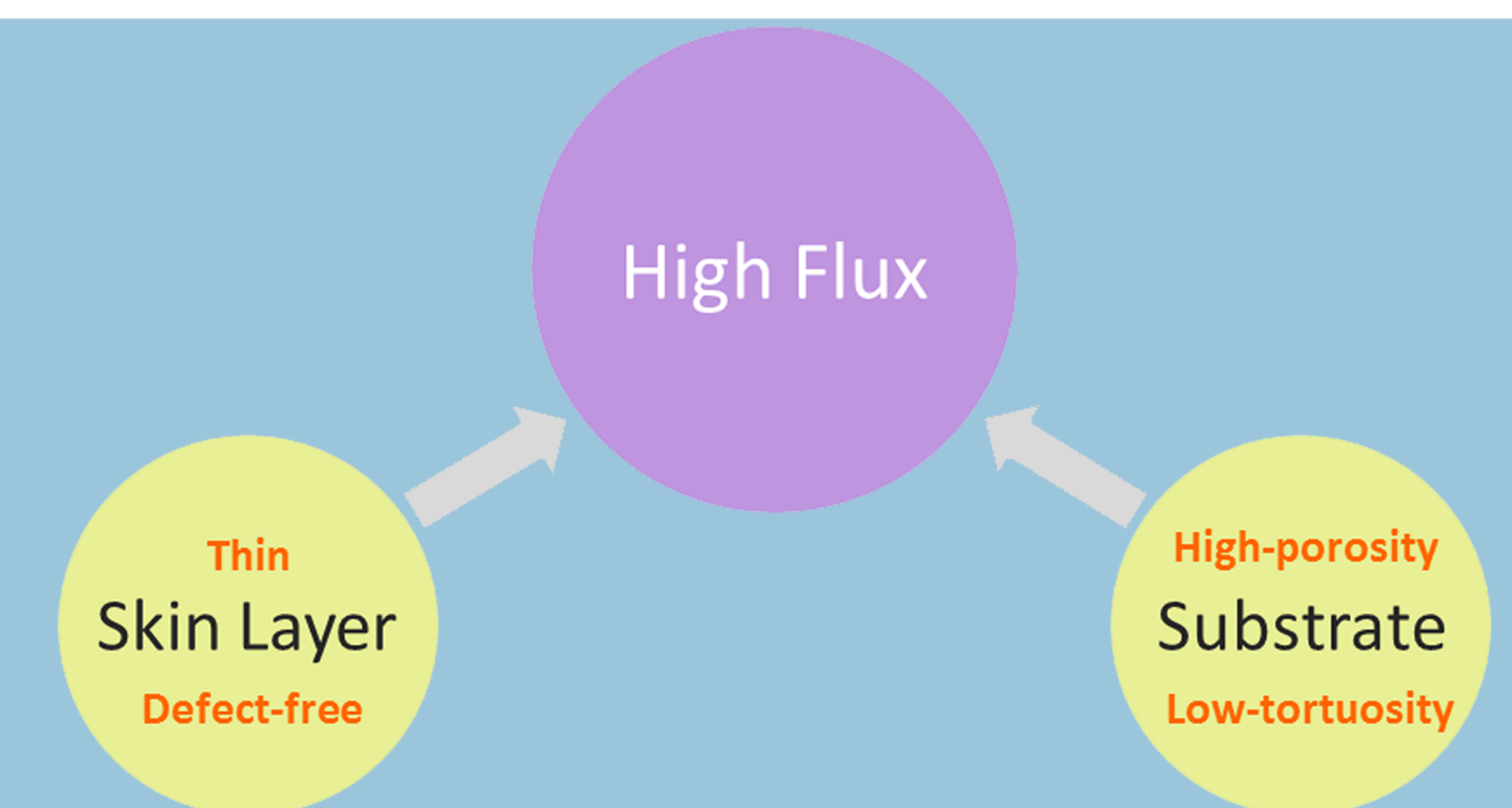
Enable High-Flux Nanofiltration on a Micro-Porous Support Through a Carbon Nanotube Intermediate Layer

Ming-Bang Wu, Yao-Cheng Yang, Yan Lv, Xi Zhang, Zhi-Kang Xu*

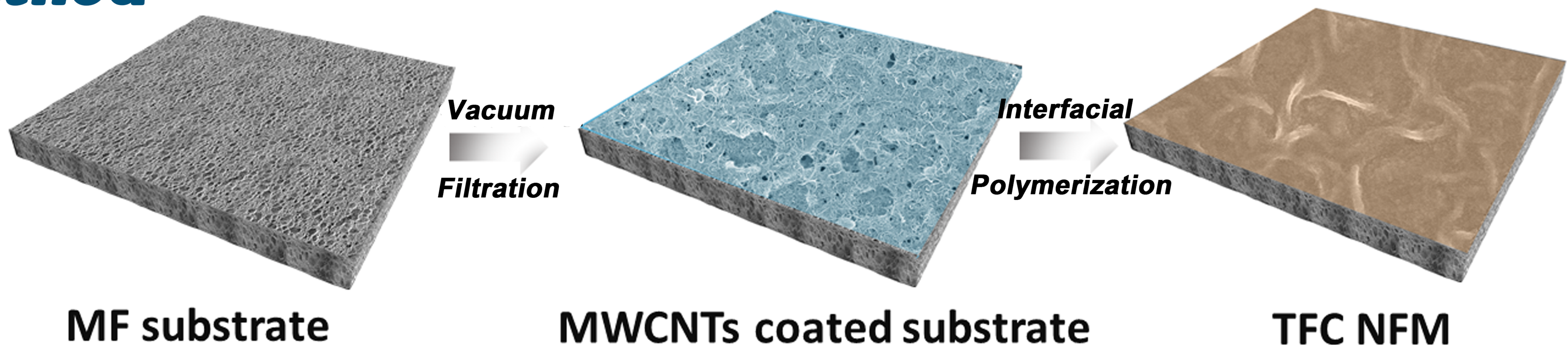
MOE Key Laboratory of Macromolecular Synthesis and Functionalization,
Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, 310027, China

Background

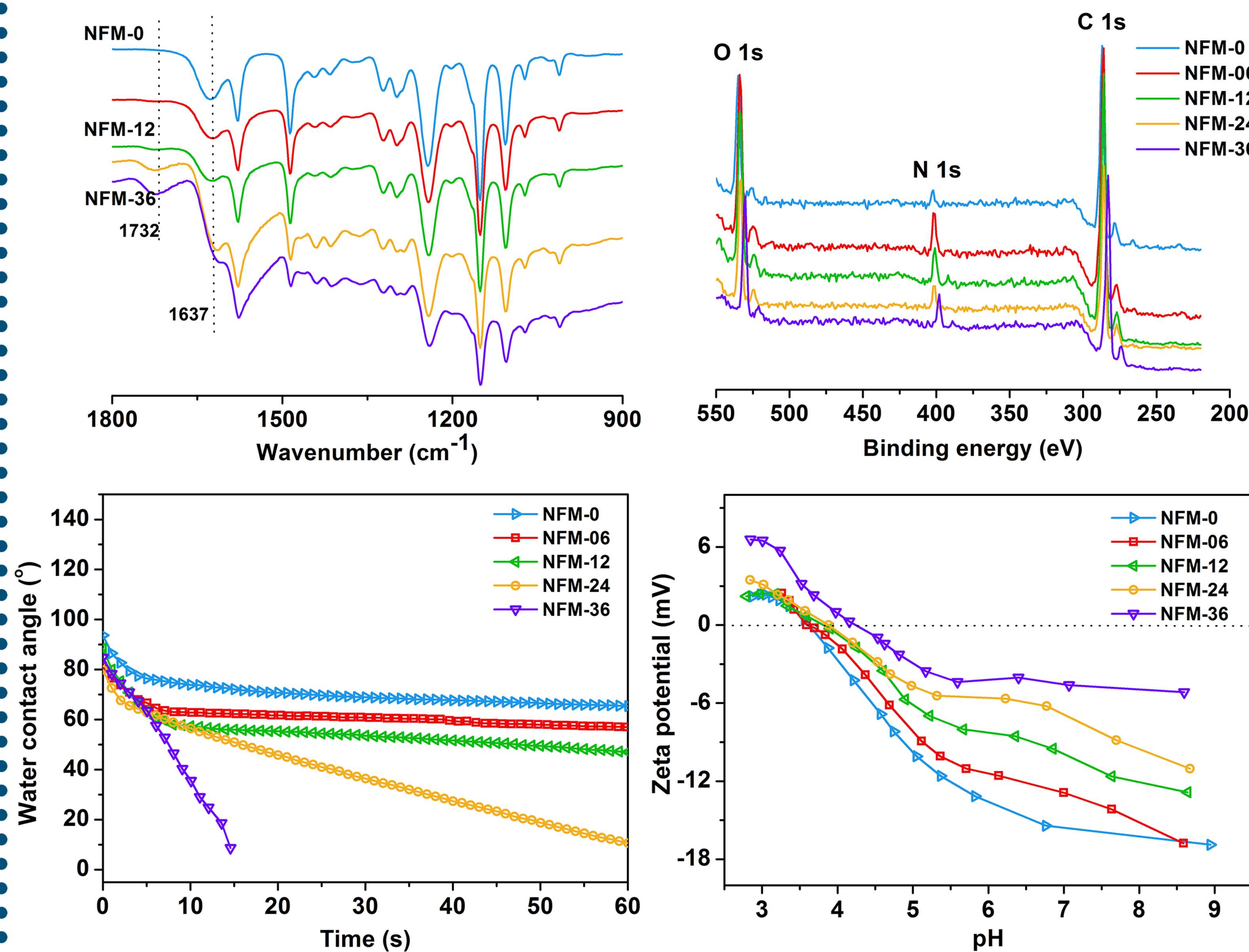
Nanofiltration has attracted worldwide interest in the field of desalination and wastewater recycling to meet the growing demand of freshwater. However, how to increase the water flux of NFMs is still a big challenge in this field. Nowadays, it is believed that thin, defect-free skin layers and high porosity substrates are vital to the NFMs performances.



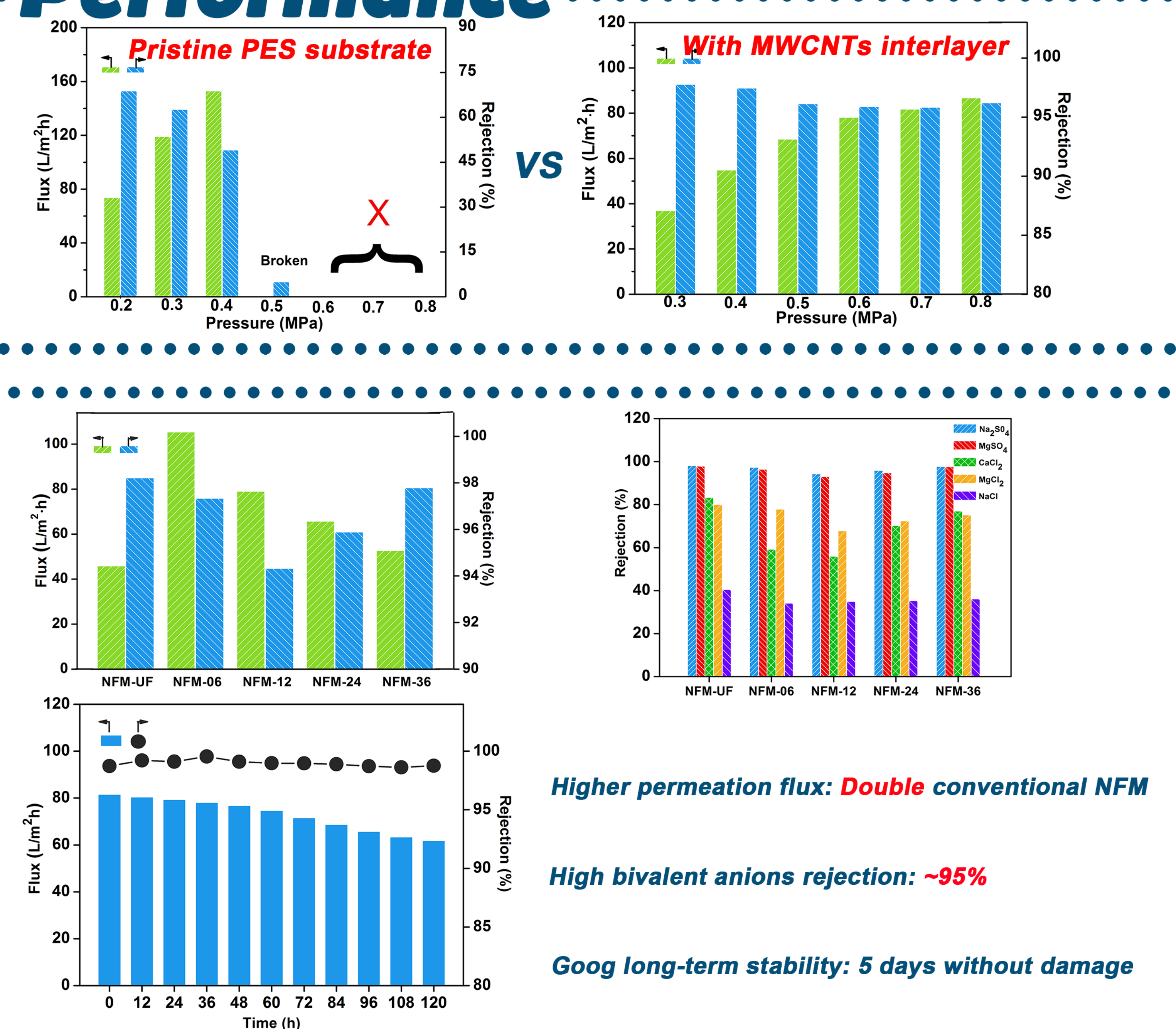
Method



Characterization



Performance



Conclusions

1. Carbon nanotube interlayer is combined with MF substrate for novel TFC NFMs;
2. The interlayer not only absorb and store the aqueous monomer but also serve as a robust support for the skin layer;
3. Water permeate flux is greatly improved without obvious decrease of salt rejection.

References

1. S. Sorribas, P. Gorgojo, et al., J. Am. Chem. Soc, 135, 15201-15208 (2013).
2. S. Karan, Z. W. Jiang, et al., Science, 348, 1347-1351 (2015).
3. X. X. Song, Z. Z. Liu, et al., Adv. Mater, 23, 3256-3260 (2011).
4. M. B. Wu, Y. LV, et al., J. Membr. Sci., 515, 238-244 (2016).

Acknowledgement

Financial support is acknowledged to the National Natural Science Foundation of China in a grant number of 50933006.

