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PII: S0376-7388(16)32628-X
DOI: <http://dx.doi.org/10.1016/j.memsci.2017.04.051>
Reference: MEMSCI15215

To appear in: *Journal of Membrane Science*

Received date: 23 December 2016
Revised date: 9 April 2017
Accepted date: 21 April 2017

Cite this article as: Wei Zhang, Ying Li, Jun Liu, Baoan Li and Shichang Wang, Fabrication of hierarchical poly (vinylidene fluoride) micro/nano-composite membrane with anti-fouling property for membrane distillation, *Journal of Membrane Science*, <http://dx.doi.org/10.1016/j.memsci.2017.04.051>

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**Fabrication of hierarchical poly (vinylidene fluoride)
micro/nano-composite membrane with anti-fouling property for
membrane distillation**

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Abstract:

Hierarchical poly (vinylidene fluoride) (PVDF) micro/nano-composite membranes were fabricated by the immersion-deposition method. As a practical surface modification way, the immersion-deposition was explored to obtain superhydrophobic membranes via coating SiO₂ nanoparticles onto PVDF membrane surface, following by fluoroalkylsilane coupling agents 1H, 1H, 2H, 2H - perfluorooctyltrichlorosilane (PFOTS) grafted on the silica. As a binder, PVDF was applied to immobilize silica nanoparticles in the process of modification. A variety of techniques were performed to examine the effects of surface modification on surface morphology, chemical composition and wettability of derived membranes, such as scanning electron microscopy (SEM), atomic force microscopy (AFM), attenuated total reflectance-Fourier transform infrared spectroscopy (ATR-FTIR) and contact angle goniometry. The surface modification endowed the membrane surface superhydrophobicity, deriving from the hierarchical structures with PVDF

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