
www.elsevier.com/locate/memsci

# Surface wormlike morphology control of polysulfone/poly(N-isopropylacrylamide) membranes by tuning the two-stage phase separation and their thermo-responsive permselectivity

Li-Jing Zhu, Hai-Ming Song, Chen Li, Gang Wang, Zhi-Xiang Zeng, Qun-Ji Xue

PII: S0376-7388(18)30181-9
DOI: https://doi.org/10.1016/j.memsci.2018.03.072
Reference: MEMSCI16066

To appear in: *Journal of Membrane Science*

Received date: 23 January 2018
Revised date: 20 March 2018
Accepted date: 24 March 2018

Cite this article as: Li-Jing Zhu, Hai-Ming Song, Chen Li, Gang Wang, Zhi-Xiang Zeng and Qun-Ji Xue, Surface wormlike morphology control of polysulfone/poly(N-isopropylacrylamide) membranes by tuning the two-stage phase separation and their thermo-responsive permselectivity, *Journal of Membrane Science,* https://doi.org/10.1016/j.memsci.2018.03.072

# Surface wormlike morphology control of polysulfone/poly(N-isopropylacrylamide) membranes by tuning the two-stage phase separation and their thermo-responsive permselectivity

Li-Jing Zhu*, Hai-Ming Song, Chen Li, Gang Wang, Zhi-Xiang Zeng*, Qun-Ji Xue

Key Laboratory of Marine Materials and Related Technologies, Zhejiang Key Laboratory of Marine Materials and Protective Technologies, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China 315201.

zhulijing@nimte.ac.cn

zengzhx@nimte.ac.cn

*Corresponding authors.



**Abstract**

The preparation of thermo-responsive polymeric porous membranes with well-defined morphology and high mechanical strength is still a great challenge. In our work, high strength and self-supporting polysulfone/poly(*N*-isopropylacrylamide) (PSf/PNIPAm) membranes with tuning wormlike network morphology and thermo-responsibility were successfully prepared via the approach combining *in situ* cross-linking polymerization with vapor-liquid nonsolvent induced phase separation (V-LIPS). With increasing the NIPAm concentration and the exposure time during the VIPS process, the wormlike networks self-assembled on the membrane surfaces, and