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Annealing of supporting layer to develop nanofiltration membrane with high thermal stability and ion selectivity

Songmiao Liang[a],* Guoyang Xu[a], Yan Jin[a], Zongce Wu[a], Zhiqi Cai[a], Ning Zhao[b], Ziliang Wu[c]

[a]*Vontron Technology Co., Ltd., Guiyang 550018, Guizhou, P.R. China*

[b]*National Laboratory of Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences (ICCAS), Beijing 100190, PR China*

[c]*Institute of Polymer composite materials, Zhejiang University, Hangzhou, 310027, PR China*

*Corresponding author: liangsongmiao@vontron.com.cn (Songmiao Liang)

Tel: +86-851-6270267; Fax: +86-851-6270267

Abstract

Thermal annealing treatment on polysulfone supporting (PS) layer was adopted to develop nanofiltration (NF) membranes with high thermal stability and high ion selectivity. The structure and properties of the resulted PS and NF membranes were systematically characterized by atomic force microscopy (AFM), scanning electron microscope (SEM), attenuated total reflectance infrared (ATR-IR) spectroscopy, drop shape analysis system and electrokinetic analyzer. The structure relationship between PS skin layer and NF active layer was verified according to the results from AFM and SEM analysis. Furthermore, thermal stability of NF membranes was evaluated under a