

Accepted Manuscript

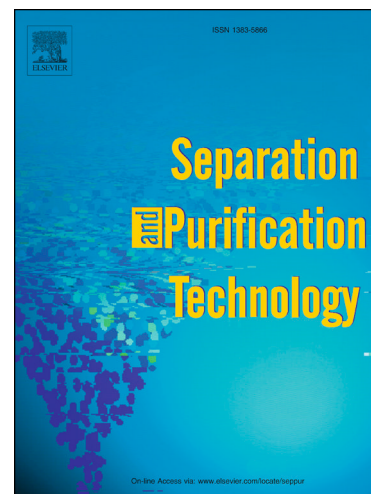
Solvent resistant nanofiltration membranes using EDA-XDA co-crosslinked poly(ether imide)

Xiao He, Ayang Zhou, Chang Shi, Jinli Zhang, Wei Li

PII: S1383-5866(17)33724-3
DOI: <https://doi.org/10.1016/j.seppur.2018.05.031>
Reference: SEPPUR 14616

To appear in: *Separation and Purification Technology*

Received Date: 15 November 2017
Revised Date: 31 March 2018
Accepted Date: 15 May 2018



Please cite this article as: X. He, A. Zhou, C. Shi, J. Zhang, W. Li, Solvent resistant nanofiltration membranes using EDA-XDA co-crosslinked poly(ether imide), *Separation and Purification Technology* (2018), doi: <https://doi.org/10.1016/j.seppur.2018.05.031>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Solvent resistant nanofiltration membranes using EDA-XDA co-crosslinked poly(ether imide)

Xiao He, Ayang Zhou, Chang Shi, Jinli Zhang, Wei Li*

Collaborative Innovation Center of Chemical Science and Chemical Engineering (Tianjin), School of Chemical Engineering & Technology, Tianjin University, Tianjin 300350, People's Republic of China.

Abstract

A co-crosslinked poly(ether imide) (PEI) material with excellent organic solvent resistance was synthesized using mixed amines of aliphatic ethylenediamine (EDA) and aromatic p-xylylenediamine (XDA), on which the organic solvent nanofiltration (NF) membrane was prepared via the interfacial polymerization between the monomer 1,2,4,5-benzene tetracarbonyl chloride (BTC) and the amine terminals on the co-crosslinked PEI. Structural characterizations indicate that the EDA-XDA co-crosslinking is an effective pathway to modulate the species and the amount of amine terminals on the surfaces, which can in turn affect the toplayer thickness and the surface roughness of the synthesized NF membrane. The results illustrate that the NF membrane prepared on the EDA-XDA (1:1) co-crosslinked PEI (c-P/1E1X) possesses superior separation performance and stability for N,N-dimethylformamide (DMF) solution. Further, the superior solvent resistant NF membrane gly-NF-c-P/1E1X-XDA was synthesized through an additional quick patching-like IP using XDA, with the aid of ethylene glycol filling inside the intermediate pores. The membrane gly-NF-c-P/1E1X-XDA shows the DMF permeance of $6.1 \text{ L m}^{-2} \text{ h}^{-1} \text{ MPa}^{-1}$ and the Rose Bengal (RB) rejection about 89%, and for a 5 g/L ceftazidime antibiotic DMF solution, the permeance is $4.6 \text{ L m}^{-2} \text{ h}^{-1} \text{ MPa}^{-1}$ and the ceftazidime rejection is

Download English Version:

<https://daneshyari.com/en/article/7043594>

Download Persian Version:

<https://daneshyari.com/article/7043594>

[Daneshyari.com](https://daneshyari.com)