The nitrogen-doped porous carbons/PIM mixed-matrix membranes for CO_2 separation

Hongyong Zhao, Lizhong Feng, Xiaoli Ding, Yun Zhao, Xiaoyao Tan, Yuzhong Zhang

www.elsevier.com/locate/memsci

PII: S0376-7388(18)31427-3
DOI: https://doi.org/10.1016/j.memsci.2018.07.075
Reference: MEMSCI16354

To appear in: *Journal of Membrane Science*

Received date: 24 May 2018
Revised date: 5 July 2018
Accepted date: 25 July 2018

Cite this article as: Hongyong Zhao, Lizhong Feng, Xiaoli Ding, Yun Zhao, Xiaoyao Tan and Yuzhong Zhang, The nitrogen-doped porous carbons/PIM mixed-matrix membranes for CO_2 separation, *Journal of Membrane Science,* https://doi.org/10.1016/j.memsci.2018.07.075

The nitrogen-doped porous carbons/PIM mixed-matrix membranes for CO_2 separation

Hongyong Zhao [a, b], Lizhong Feng [a, b], Xiaoli Ding [a, c, *], Yun Zhao [a, b], Xiaoyao Tan [a, b], Yuzhong Zhang [a, c]

[a] State Key Laboratory of Separation Membranes and Membrane Processes/National Center for International Joint Research on Separation Membranes, Tianjin Polytechnic University, Tianjin 300387, China

[b] School of Environmental and Chemical Engineering, Tianjin Polytechnic University, Tianjin 300387, China

[c] Institute of Separation Material and Process Control, School of Material Science and Engineering, Tianjin Polytechnic University, Tianjin 300387, China

*Corresponding author. Tel.: +86 022 83955808. E-mail address: dingxiaoli@tjpu.edu.cn (Xiaoli Ding)

Abstract

Nitrogen-doped porous carbons (NDPC)/polymer of intrinsic microporosity (PIM) mixed-matrix membranes (MMMs) were fabricated via a thermal treatment of the ionic liquids (ILs)/PIM blending membranes, in which the nitrile-containing ILs reacted and formed the NDPC with three-dimensional-connected frame-works after the thermal post-treatment. The chemical characterization was performed by Fourier transform infrared spectroscopy. The thermal property was investigated by thermo-gravimetric analysis. The average inter-chain distance of the MMMs was