

Ultrathin Zeolitic-Imidazolate Framework ZIF-8 Membranes on Polymeric Hollow Fibers for Propylene/Propane Separation

Moon Joo Lee, Mohamad Rezi Abdul Hamid, Jongmyeong Lee, Ju Sung Kim, Young Moo Lee, Hae-Kwon Jeong



PII: S0376-7388(18)30407-1
DOI: <https://doi.org/10.1016/j.memsci.2018.04.041>
Reference: MEMSCI16125

To appear in: *Journal of Membrane Science*

Received date: 9 February 2018
Revised date: 13 April 2018
Accepted date: 25 April 2018

Cite this article as: Moon Joo Lee, Mohamad Rezi Abdul Hamid, Jongmyeong Lee, Ju Sung Kim, Young Moo Lee and Hae-Kwon Jeong, Ultrathin Zeolitic-Imidazolate Framework ZIF-8 Membranes on Polymeric Hollow Fibers for Propylene/Propane Separation, *Journal of Membrane Science*, <https://doi.org/10.1016/j.memsci.2018.04.041>

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 galley proof before it is published in its final citable 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.

Ultrathin Zeolitic-Imidazolate Framework ZIF-8 Membranes on Polymeric Hollow Fibers for Propylene/Propane Separation

Moon Joo Lee¹†, Mohamad Rezi Abdul Hamid¹†, Jongmyeong Lee³, Ju Sung Kim³, Young Moo Lee³ and Hae-Kwon Jeong^{*1,2}

¹Artie McFerrin Department of Chemical Engineering and ²Department of Materials Science and Engineering, Texas A&M University, College Station, TX 77843-3122

³Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Republic of Korea

† These authors contributed equally

* Corresponding author: hjeong7@tamu.edu

Abstract

Polymer hollow fibers have great potential as cost-effective scalable substrates for the practical applications of highly propylene-selective ZIF-8 membranes. We report ultrathin ZIF-8 membranes supported on porous Matrimid[®] polymer hollow fibers via microwave-assisted seeding and microfluidic secondary growth. Densely-packed ZIF-8 seed layers were rapidly prepared on polymeric hollow fibers under microwave heating. The seed layers were then secondarily grown into well-intergrown ZIF-8 membranes under the continuous flow of the growth solution. The effects of synthesis parameters on the microstructures of ZIF-8 seed crystals were systematically studied. The resulting ZIF-8 membranes were characterized with XRD and SEM, showing well-intergrown ZIF-8 films formed on the bore of hollow fibers. The

Download English Version:

<https://daneshyari.com/en/article/7019803>

Download Persian Version:

<https://daneshyari.com/article/7019803>

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