

Author's Accepted Manuscript

Dual-layered nanocomposite membrane incorporating graphene oxide and halloysite nanotube for high osmotic power density and fouling resistance

Sungil Lim, Myoung Jun Park, Sherub Phuntsho, Anne Mai-Prochnow, Anthony B. Murphy, Donghan Seo, Hokyong Shon



PII: S0376-7388(18)30799-3
DOI: <https://doi.org/10.1016/j.memsci.2018.06.055>
Reference: MEMSCI16272

To appear in: *Journal of Membrane Science*

Received date: 23 March 2018
Revised date: 24 May 2018
Accepted date: 24 June 2018

Cite this article as: Sungil Lim, Myoung Jun Park, Sherub Phuntsho, Anne Mai-Prochnow, Anthony B. Murphy, Donghan Seo and Hokyong Shon, Dual-layered nanocomposite membrane incorporating graphene oxide and halloysite nanotube for high osmotic power density and fouling resistance, *Journal of Membrane Science*, <https://doi.org/10.1016/j.memsci.2018.06.055>

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.

**Dual-layered nanocomposite membrane incorporating graphene oxide and halloysite
nanotube for high osmotic power density and fouling resistance**

Sungil Lim¹, Myoung Jun Park¹, Sherub Phuntsho¹, Anne Mai-Prochnow², Anthony B. Murphy²,
Donghan Seo² and Hokyong Shon^{1*}

¹ *Centre for Technology in Water and Wastewater (CTWW), School of Civil and Environmental
Engineering, University of Technology Sydney (UTS), Australia*

² *Commonwealth Scientific and Industrial Research Organisation (CSIRO) Manufacturing,
Australia*

* Corresponding author: Professor Hokyong Shon, Tel.: +61 2 9514 2629; Fax: +61 2 9514 2633.,
hokyong.shon-1@uts.edu.au

Abstract

This study introduces a thin-film composite (TFC) membrane with a dual-layered nanocomposite substrate synthesized using a dual-blade casting approach for application in osmotic power generation by the pressure-retarded osmosis (PRO) process. The approach incorporates halloysite nanotubes (HNTs) into the bottom polymer substrate layer and graphene oxide (GO) on the top layer substrate, on which a thin polyamide active layer is formed. The fabricated membrane substrate showed highly desirable membrane substrate properties such as a high porosity, opened-bottom surface, suitable top-skin surface morphology for subsequent active

Download English Version:

<https://daneshyari.com/en/article/7019610>

Download Persian Version:

<https://daneshyari.com/article/7019610>

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