

## Author's Accepted Manuscript

Improved antifouling properties of polyvinyl chloride blend membranes by novel phosphate based-zwitterionic polymer additive

Li-Feng Fang, Sungil Jeon, Yuriko Kakihana, Jun-ichi Kakehi, Bao-Ku Zhu, Hideto Matsuyama, Shuaifei Zhao



PII: S0376-7388(16)31368-0  
DOI: <http://dx.doi.org/10.1016/j.memsci.2017.01.044>  
Reference: MEMSCI15037

To appear in: *Journal of Membrane Science*

Received date: 19 August 2016  
Revised date: 13 January 2017  
Accepted date: 23 January 2017

Cite this article as: Li-Feng Fang, Sungil Jeon, Yuriko Kakihana, Jun-ichi Kakehi, Bao-Ku Zhu, Hideto Matsuyama and Shuaifei Zhao, Improved antifouling properties of polyvinyl chloride blend membranes by novel phosphate based-zwitterionic polymer additive, *Journal of Membrane Science* <http://dx.doi.org/10.1016/j.memsci.2017.01.044>

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

# Improved antifouling properties of polyvinyl chloride blend membranes by novel phosphate based-zwitterionic polymer additive

Li-Feng Fang<sup>a</sup>, Sungil Jeon<sup>a</sup>, Yuriko Kakihana<sup>a</sup>, Jun-ichi Kakehi<sup>a</sup>, Bao-Ku Zhu<sup>b</sup>, Hideto Matsuyama<sup>a\*</sup>, Shuaifei Zhao<sup>a,c</sup>

<sup>a</sup>*Center for Membrane and Film Technology, Department of Chemical Science and Engineering, Kobe University, Rokkodaicho 1-1, Nada, Kobe 657-8501, Japan*

<sup>b</sup>*Engineering Research Center of Membrane and Water Treatment (MOE), Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China*

<sup>c</sup>*Department of Environmental Sciences, Macquarie University, Sydney, NSW 2109, Australia*

\*Corresponding author: [matuyama@kobe-u.ac.jp](mailto:matuyama@kobe-u.ac.jp)

## Abstract

To improve the antifouling properties of polymer membranes, a novel phosphate-based zwitterionic polymer (methacryloyloxyethylphosphorylcholine-co-poly(propylene glycol) methacrylate, i.e., MPC-PPGMA) is introduced into the polyvinyl chloride (PVC) membrane matrix. The solubility of this zwitterionic copolymer in common organic solvents and the compatibility between this copolymer and PVC are studied. A series of PVC blend membranes are prepared via non-solvent induced phase separation based on the good compatibility of the copolymer with PVC. Surface chemical compositions, wettability and porous structures of the membranes are characterized. Fluorescence-labeled proteins static adsorption and organic foulant filtration are conducted to evaluate the fouling resistance of the blend membranes. Antibiofouling properties of the membranes are also confirmed by the immersing method. Doping MPC-PPGMA in the casting solution can significantly improve the surface

Download English Version:

<https://daneshyari.com/en/article/4989175>

Download Persian Version:

<https://daneshyari.com/article/4989175>

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