

Accepted Manuscript

Synthesis and characterization of polyester bionanocomposite membrane with ultrasonic irradiation process for gas permeation and antibacterial activity

Hashem Ahmadizadegan, Sheida Esmailzadeh, Mahdi Ranjbar, Zahra marzban, Fatemeh Ghavas

PII: S1350-4177(17)30491-1

DOI: <https://doi.org/10.1016/j.ultsonch.2017.10.020>

Reference: ULTSON 3924

To appear in: *Ultrasonics Sonochemistry*

Received Date: 21 September 2017

Revised Date: 21 October 2017

Accepted Date: 21 October 2017



Please cite this article as: H. Ahmadizadegan, S. Esmailzadeh, M. Ranjbar, Z. marzban, F. Ghavas, Synthesis and characterization of polyester bionanocomposite membrane with ultrasonic irradiation process for gas permeation and antibacterial activity, *Ultrasonics Sonochemistry* (2017), doi: <https://doi.org/10.1016/j.ultsonch.2017.10.020>

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.

**Synthesis and characterization of polyester
bionanocomposite membrane with ultrasonic irradiation
process for gas permeation and antibacterial activity**

Hashem Ahmadizadegan^{1}, Sheida Esmailzadeh^{1, 2}, Mahdi Ranjbar^{1, 2},*

Zahra marzban³ and Fatemeh Ghavas³

¹*Department of Chemistry, Darab branch, Islamic Azad University,
Darab 7481783143-196, Islamic Republic of Iran*

²*The Young Researchers and Elite Club, Darab Branch, Islamic Azad
University*

³*Department of nursing, Jahrom branch, Islamic Azad University,
Jahrom 7414785318, Islamic Republic of Iran*

*Corresponding author:

E-mail address: h.ahmadizadegan.2005@gmail.com

Abstract

Optically active bionanocomposite membranes composed of polyester (PE) and cellulose /silica bionanocomposite (BNCs) prepared with simple, green and inexpensive ultrasonic irradiation process. It is a novel method to enhance the gas separation performance. The novel optically active diol containing functional trifluoromethyl groups was prepared in four steps reaction and it was fully characterized by different techniques. Commercially available silica nanoparticles were modified with biodegradable nanocellulose through ultrasonic irradiation technique. Transmission electron microscopy (TEM) analyses showed that the cellulose/silica composites were well dispersed in the polymer matrix on a nanometer scale. The mechanical properties nanocomposite films were improved by the addition of cellulose/silica. Thermo gravimetric analysis (TGA) data indicated an increase thermal stability of the PE/BNCs in

Download English Version:

<https://daneshyari.com/en/article/7703634>

Download Persian Version:

<https://daneshyari.com/article/7703634>

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