

## Author's Accepted Manuscript

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PII: S1751-6161(18)30908-1  
DOI: <https://doi.org/10.1016/j.jmbbm.2018.09.001>  
Reference: JMBBM2966

To appear in: *Journal of the Mechanical Behavior of Biomedical Materials*

Received date: 17 June 2018  
Revised date: 31 August 2018  
Accepted date: 2 September 2018

Cite this article as: Arman Jafari, Shadi Hassanajili, Mohammad Bagher Karimi, Amir Emami, Farnaz Ghaffari and Negar Azarpira, Effect of organic/inorganic nanoparticles on performance of polyurethane nanocomposites for potential wound dressing applications, *Journal of the Mechanical Behavior of Biomedical Materials*, <https://doi.org/10.1016/j.jmbbm.2018.09.001>

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# Effect of organic/inorganic nanoparticles on performance of polyurethane nanocomposites for potential wound dressing applications

Arman Jafari<sup>a</sup>, Shadi Hassanajili<sup>a,\*</sup>, Mohammad Bagher Karimi<sup>b</sup>, Amir Emami<sup>c</sup>, Farnaz

Ghaffari<sup>a</sup>, Negar azarpira<sup>d</sup>

<sup>a</sup> Department of Chemical Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Shiraz 71348-51154, Iran

<sup>b</sup> Iran Polymer and Petrochemical Institute, 14965-115, Tehran, Iran

<sup>c</sup> Burn & Wound Healing Research Center, Microbiology Department, Shiraz University of Medical Science, Shiraz, 71345-1978, Iran

<sup>d</sup> Transplant Research Center, Shiraz University of Medical Science, Shiraz, 71345-1978, Iran

\* Corresponding author: Shadi Hassanajili, e-mail: ajili@shirazu.ac.ir\_Tel: +98 713 6133779

## Abstract

This study focuses on the evaluation and modification of polyurethane (PU) membranes containing organic and inorganic nanoparticles for potential use as a wound dressing. For the purpose of PU nanocomposite preparation, chitosan (CS) was converted into nanoparticles by the ionic-gelation method to improve its blending capability with the PU matrix. These CS nanoparticles (nano-CS) were obtained as a hydrophilic organic filler with different contents and were utilized along with inorganic titanium dioxide (TiO<sub>2</sub>) nanoparticles in the nanocomposite membrane preparation. The membranes were prepared using phase inversion technique and their microstructure was controlled by manipulating the solvent non-solvent exchange rate. Obtained results demonstrate that addition of polymer solvent to nonsolvent induced a microstructure alteration from finger-like to sponge-like, which is more suitable for fluid uptake and

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