

Accepted Manuscript

Title: Nanocomposite films based on chitosan–poly(vinyl alcohol) and silver nanoparticles with high antibacterial and antioxidant activities

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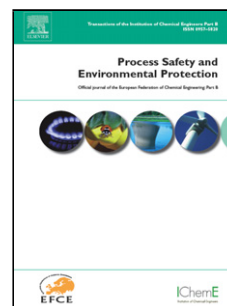
PII: S0957-5820(17)30199-4
DOI: <http://dx.doi.org/doi:10.1016/j.psep.2017.06.018>
Reference: PSEP 1099

To appear in: *Process Safety and Environment Protection*

Received date: 13-3-2017
Revised date: 16-6-2017
Accepted date: 25-6-2017

Please cite this article as: Hajji, Sawssen, Salem, Rabeb Ben Slama-Ben, Hamdi, Marwa, Jellouli, Kemel, Ayadi, Wajdi, Nasri, Moncef, Boufi, Sami, Nanocomposite films based on chitosan–poly(vinyl alcohol) and silver nanoparticles with high antibacterial and antioxidant activities. *Process Safety and Environment Protection* <http://dx.doi.org/10.1016/j.psep.2017.06.018>

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Nanocomposite films based on chitosan-poly (vinyl alcohol) and Silver nanoparticles with high antibacterial and antioxidant activities

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Abstract

The present study involves the synthesis of chitosan-silver nanocomposite films (CSNFs) due to their increasing areas of application in various domains such as wound dressing and water purification. Silver nanoparticles (AgNPs) were prepared by using UV-irradiation *in-situ* using chitosan as both reductant and stabilizer. FTIR spectra revealed that the primary amine and amide groups of chitosan have specific interactions with nanoparticles surface. The diameter of AgNPs ranged from 170 to 200 nm as determined by DLS and TEM observation.

Furthermore, CSNFs were tested for their biological activities and results showed higher antioxidant and antibacterial activities than chitosan film, which increased with AgNPs amount, suggesting that surface structures of chitosan strongly influence the adsorption of AgNPs and the antimicrobial activities. These observations indicate that nanocomposite films have potential applications as anti-infectious wound dressing. Many studies reported the toxicity of AgNPs and their health and environmental risks. For that purpose, cytotoxicity of

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