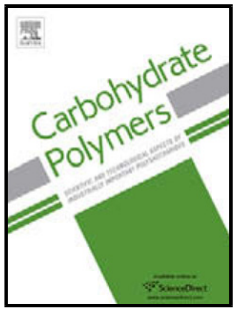

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PII: S0144-8617(15)00696-7
DOI: http://dx.doi.org/doi:10.1016/j.carbpol.2015.07.067
Reference: CARP 10169

To appear in:

Received date: 14-5-2015
Revised date: 17-7-2015
Accepted date: 20-7-2015

Please cite this article as: Cheviron, Perrine., Gouanvé, Fabrice., & Espuche, Eliane., Starch/silver nanocomposite: Effect of thermal treatment temperature on the morphology, oxygen and water transport properties.*Carbohydrate Polymers* http://dx.doi.org/10.1016/j.carbpol.2015.07.067

Starch/silver nanocomposite: Effect of thermal treatment temperature on the morphology, oxygen and water transport properties.

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Abstract

The present work reports a strategy involving the preparation of nanostructured starch based film containing silver nanoparticles (AgNPs) using a completely green chemistry process. The nanocomposite films were prepared by solution cast process. The AgNPs were *in situ* generated inside the polymer film by thermal treatment at different temperatures (25, 40 and 85 °C). The influence of the presence and the amount of reducing agent (glucose) were also investigated. For all nanocomposite films, the AgNPs were spherical with a diameter less than 15 nm. Contrary to the presence of glucose, thermal treatment condition was a key factor for the AgNPs structure. Crystalline AgNPs were obtained only after thermal treatment at 85 °C. Improvements of water and oxygen barrier properties near to one decade were observed in