

Accepted Manuscript

Title: Silica *in situ* enhanced PVA/chitosan biodegradable films for food packages

Authors: Zhen Yu, Baoqiang Li, Jiayu Chu, Peifeng Zhang

PII: S0144-8617(17)31450-9

DOI: <https://doi.org/10.1016/j.carbpol.2017.12.043>

Reference: CARP 13105



To appear in:

Received date: 1-10-2017

Revised date: 12-12-2017

Accepted date: 14-12-2017

Please cite this article as: Yu Z, Li B, Chu J, Zhang P, Silica *in situ* enhanced PVA/chitosan biodegradable films for food packages, *Carbohydrate Polymers* (2010), <https://doi.org/10.1016/j.carbpol.2017.12.043>

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Silica *in situ* enhanced PVA/chitosan biodegradable films for food packages

Zhen Yu ^a, Baoqiang Li ^{b, c*}, Jiayu Chu ^d, Peifeng Zhang ^b

^a School of Energy Science and Engineering, Harbin Institute of Technology, Harbin 150001, P.R. China

^b Institute for Advanced Ceramics, State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology, Harbin 150001, P.R. China

^c Key Laboratory of Advanced Structural-Functional Integration Materials & Green Manufacturing Technology, Harbin Institute of Technology, Harbin, 150001, P.R. China

^d School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin 150001, P.R. China

* Corresponding author: libq@hit.edu.cn

Highlights:

- Silica was *in situ* synthesized via hydrolysis of sodium metasilicate **in presence of PVA and chitosan solution.**
- *In situ* synthesized silica improved tensile strength as high as 45% through hydrogen bonds between **silica and PVA or chitosan**
- *In situ* synthesized silica reduced permeability of oxygen and moisture **by 25.58% and 10.2%**
- Silica *in situ* enhanced PVA/chitosan biodegradable film for food package prolonged the preservation time **by 3 times compared to the food without PVA/chitosan biodegradable film**

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