Accepted Manuscript

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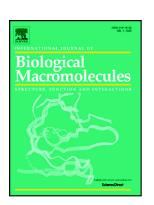
PII: S0141-8130(18)30324-6

DOI: doi:10.1016/j.ijbiomac.2018.03.129

Reference: BIOMAC 9351

To appear in:

Received date: 18 January 2018
Revised date: 27 February 2018
Accepted date: 21 March 2018



Please cite this article as: Mónica Cobos, Bernardina González, M. Jesús Fernández, M. Dolores Fernández, Study on the effect of graphene and glycerol plasticizer on the properties of chitosan-graphene nanocomposites via in situ green chemical reduction of graphene oxide. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Biomac(2017), doi:10.1016/j.ijbiomac.2018.03.129

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ABSTRACT

Unplasticized and glycerol plasticized chitosan/graphene (CS/GS) nanocomposites were synthesized via in situ chemical reduction of graphene oxide sheets (GO) with L-ascorbic acid (L-AA) as reductant by solution casting. The reduction of GO with L-AA was investigated to establish the optimal amount of reductant required to produce chemically reduced graphene sheets (GS). The combine effect of both nanofiller and glycerol on the structure, thermal, mechanical, and electrical properties of CS/GS nanocomposite films was evaluated. Materials were characterized by FT-IR, NMR, UV-Vis, XPS, XRD, Raman, SEM, TEM, and TGA. The results showed that GS sheets were homogeneously dispersed throughout the CS matrix, and that interactions between CS and the surface of GS took place. When compared with neat CS, nanocomposites showed a decrease in the crystallinity, better thermal stability under oxidative atmosphere, and improved mechanical properties, while maintained the thermal properties of CS under inert conditions. Combined use of glycerol and GS led to substantially enhanced mechanical properties. The electrical conductivity was increased with increasing GS loading in nanocomposite. This study

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