



ChemTech

International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.11 No.09, pp 170-175, 2018

Thermosensitive Nanohydrogels for Food Packaging Fabrication

Liliana Polo-Corrales*, María José Tavera-Quiroz,
Elvis Judith Hernández-Ramos

Department of Agroindustrial Engineering, Innovation and Development of Food Processes (DESINPA) - Universidad de Sucre, Cra. 28 #5-267, PuertaRoja, Sincelejo, Colombia

Abstract : Manufacturing of active packaging with controlled release of biocompounds into food is a challenge for the food industry. The incorporation of thermosensitive nanohydrogels in this type of packaging can modulate the delivery mechanism of bioactive agents. The thermosensitive nanohydrogels phase transition was studied in this work. Nanohydrogels were obtained by covering metal nanoparticles of magnetite (Fe_3O_4) with a polymeric layer of pNIPAM. Phase transition of nanohydrogels was observed by the change of hydrodynamic diameter in a temperature range below and above the lower critical solution temperature (LCST) of pNIPAM ($T = 32^\circ\text{C}$). Infrared analysis, hydrodynamic diameter, and thermal analysis were performed in this study. The results demonstrated that nanohydrogels have a phase transition at a temperature very close to LCST of pNIPAM. Also, the nanohydrogels can be an option of nanofiller for manufacturing of active packages responding to external stimuli such as a temperature increase.

Liliana Polo-Corrales *et al* /International Journal of ChemTech Research, 2018,11(09): 170-175.

DOI= <http://dx.doi.org/10.20902/IJCTR.2018.110922>
