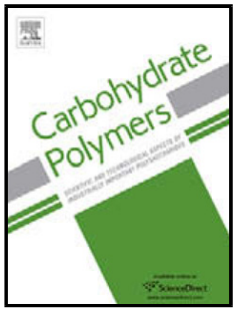

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Author: Ahmedy Abu Naim Abdulganiyu Umar Mohd Marsin Sanagi Noraimi Basaruddin

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Chemical modification of chitin by grafting with polystyrene using ammonium persulfate initiator

Ahmedy Abu Naim [a,*], Abdulganiyu Umar [a], Mohd Marsin Sanagi [b], Noraimi Basaruddin[a]

[a]Department of Chemistry, Faculty of Science, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia

[b]Ibnu Sina Institute for Fundamental Science Studies, Nanotechnology Research Alliance, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia

* Corresponding author. Tel.: +6075534462; fax: +6075566162.

E-mail address: ahmedy@kimia.fs.utm.my (A. Abu.Naim).

Abstract

Chitin was successfully grafted with polystyrene by free radical mechanism using ammonium persulfate (APS) initiator. The reaction was carried out in aqueous medium. The effect of pH, chitin:monomer weight ratio, APS, reaction time and reaction temperature were investigated. The results showed that the optimum conditions for grafting of polystyrene were found as follows: pH 7, chitin:monomer weight ratio of 1:3, 0.4g of APS, reaction temperature of 60 °C and reaction time 2 h. The graft copolymer was characterized by Fourier transform infrared spectroscopy, thermogravimetric analysis (TGA) and differential scanning electron microscopy (DSC). Gel permeation chromatography (GPC) analysis carried out on the hydrolyzed graft copolymer showed that the M_n and M_w were 6.3395×10^4 g/mol and 1.69283×10^5 g/mol, respectively, with polydispersity index of 2.7.