

Chemical modification of cellulose acetate by N-(phenyl amino)maleimides: Characterization and properties

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International Journal of Biological Macromolecules

Volume ٦٨ (٢٠١٤) ٢١-٢٧

Impact factor: ٣.١٣٨

A b s t r a c t

Cellulose acetate (CA) was modified using N-(phenyl amino) maleimides (R-APhM) where, R H or ξ -NO₂. The structure of the modified polymer was characterized by ¹³C-NMR. The chemical modification is based on the reaction between the acetyl group of the glucopyranose ring in cellulose acetate and the proton of the amino group in N-(phenyl amino) maleimide molecule. The thermal gravimetry (TGA) was used to investigate the thermal stability of the modified polymeric samples. The modified cellulose acetate by ξ -nitro (phenyl amino) maleimide (CA/ ξ -NO₂APhM) exhibits the highest thermal stability as compared to the N-(phenyl amino) maleimide (CA/APhM) and the unmodified CA. The crystallinity and morphology of the modified polymeric samples were investigated using X-ray diffraction (XRD) and emission scanning electron microscope (ESEM), respectively. The presence of N-(phenyl amino) maleimide moieties in the cellulose acetate matrix improved its mechanical property. Also, the organic nature of (R-APhM) moieties inside CA matrix reduced its wettability.

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