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Graft Copolymerization of Cellulose Acetate with Nitro-N-Amino Phenyl Maleimides

Authors : Azza. A. Al-Ghamdi, Abir. A. Abdel-Naby

Abstract : The construction of Nitro -N-amino phenyl maleimide branches onto Cellulose acetate (CA) substrate by free radical graft copolymerization using benzoyl peroxide as initiator led to formation of highly thermal stable copolymers as shown from the results of gravimetric analysis (TGA). CA-g-2,4-dinitro amino phenyl maleimide exhibited higher thermal stability than the CA-g-4-nitro amino phenyl maleimide as shown from the initial decomposition temperature (T_o). This is due to the ability of nitro group to form hydrogen bonding with hydroxyl group of the glucopyranose ring which increases the crystallinity of polymeric matrix. The crystalline shapes representing the graft part are clearly distinct in the Emission scanning electron microscope (ESEM) morphology of the copolymer. A suggested reaction mechanism for the grafting process was also discussed.

Keywords : Cellulose acetate, Crystallinity, Graft copolymerization, Thermal properties
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