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Synthesis and Characterization of Modified Starch and its Blend With LDPE

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ABSTRACT

Starch have now become cynosure among all the others because of an unusual combination of biological activities plus mechanical and physical properties. Present work comprises the chemical modification of starch by grafting vinyl monomers i.e. Methyl methacrylate and acrylamide in a homogeneous aqueous phase using ceric ammonium nitrate (CAN) as the initiator. All these three variants of starch was blended with low-density polyethylene (LDPE) in various composition. Low density polyethylene was grafted with maleic anhydride and subsequently used as a compatibilizer to promote the interfacial interaction between the ingredients. The characterization of the grafted products was confirmed by Fourier Transform Infrared spectroscopy (FT-IR) as well as Percentage grafting G (%), percentage efficiency E (%) and yield of graft copolymerization, Y (%) was determined. The prepared blends were subjected to Scanning Electron Microscopy (SEM), thermal gravimetric analysis (TGA) and biodegradation study.

Keywords: Starch, graft co-polymers, CAN, LDPE, LDPE-g-MA, and biodegradation