

PREPARATION AND CHARACTERIZATION OF EVA/PLA/SCB COMPOSITES FOR WATER PURIFICATION

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ABSTRACT

This study deals with the preparation of effective, cheap and environmentally friendly PLA/EVA/SCB biocomposites for the removal of heavy metals from aqueous media. Sugarcane bagasse (SCB) is the fibrous residue from stems after extraction of juice. It serves as the main component that removes heavy metals from aqueous media, but because it is easily degraded by microbes, a masking agent is required. Poly(lactic acid) (PLA) serves as a masking agent on the biocomposites. Due to its brittleness and poor toughness, ethylene vinyl acetate (EVA) is used to help improve the processing and toughness of PLA in the biocomposites. To improve the compatibility of PLA/EVA blends, 0.1 phr dicumyl peroxide (DCP) was added to create a lightly crosslinked network. The thermal transitions, as well as the crystallinity of the biocomposites were analysed by differential scanning calorimetry, the thermal stability and decomposition behaviour were studied by thermogravimetric analysis, the phase morphologies by scanning electron microscopy, the mechanical properties by impact testing and tensile testing and the adsorption capacities by atomic absorption spectrophotometer. Some of the results from these analyses will be presented and discussed.