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# Preparation of Polyethylene/Cashewnut Flour/ Gum Arabic Polymer Blends Through Melt-blending and Determination of Their Biodegradation by Composting Method for Possible Reduction of Polyethylene-based Wastes from the Environment



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**Abstract :** Plastic wastes arising from Polyethylene (PE)-based materials are increasingly becoming environmental problem, this is owed to the fact that these PE waste materials will only decompose over hundreds, or even thousands of years, during which they cause serious environmental problems. In this research, Polymer blends prepared from PE, Cashewnut flour (CNF) and Gum Arabic (GA) were studied in order to assay their biodegradation potentials via composting method. Different sample formulations were made i.e., X1= (70% PE, 25% CNF and 5% GA, X2= (70% PE, 20% CNF and 10% GA), X3= (70% PE, 15% CNF and 15% GA), X4 = (70% PE, 10% CNF and 20% GA) and X5 = (70% PE, 5% CNF and 25% GA) respectively. The results obtained showed that X1 recorded weight loss of 9.89% of its original weight after the first 20 days and 37.45% after 100 day, and X2 lost 12.67 % after the first 20 days and 42.56% after 100day, sample X5 experienced the greatest weight lost in the two methods adopted which are 52.9% and 57.89%. Instrumental analysis such as Fourier Transform Infrared Spectroscopy, Thermogravimetric analysis and Scanning electron microscopy were performed on the polymer blends before and after biodegradation. The study revealed that the biodegradation of the polymer blends is influenced by the contents of both the CNF and GA added into the blends.

**Keywords :** polyethylene, cashewnut, gum Arabic, biodegradation, blend, environment
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