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Biodegradation properties of poly (lactic) acid reinforced by kenaf fibers (Conference Paper)

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Abstract

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This study was conducted to study the degradation of poly (lactic) acid and its composites under natural landfill burial. Composites reinforced with natural fibres were expected to degrade faster than polymer based. PLA was compounded with kenaf bast fibre (KBC) and kenaf core fibre (KCC) with twin screw extrusion at temperature range 150-160 °C and being compression moulded at 170 °C for 8 minutes. Samples were then cut prior to testing by burying under composting area in UTM Shah Alam, Selangor, Malaysia for 6 month period. Samples were measured and observed monthly for the degradation of composites by weight loss and microscopic observation. As expected weight loss for kenaf bast composite (KBC) and kenaf core composite (KCC) was found to be higher, 15.9% and 17.1% respectively, than that of pure PLA of only 4.14%. Microscopic observation confirms degradation has occurred on surface of composites by making cracks, holes, and black spots on all samples, however degradation was more obvious on composites. FTIR analysis shows that spectra of exposed composites were reduced compared to those of unexposed composites.

Indexed keywords

Engineering controlled terms:

Biodegradation Extrusion Fibres Fourier transform infrared spectroscopy Hemp Reinforced plastics Reinforcement

Compendex keywords:

FTIR analysis Kenaf bast fibres Kenaf core fibres Microscopic observations Poly lactic acid Temperature range Twin screw extrusion Weight loss

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Kenaf fibres

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