BANANA FIBRES: EXTRACTION AND POTENTIAL USE AS REINFORCEMENT FOR POLYPROPYLENE

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Abstract

The objective of this work was to investigate fibre extraction from banana pseudo-stem and the potential use of these banana fibres as reinforcement for polypropylene (PP). A combination of chemical and mechanical methods was used for extraction of banana fibres. Thermal and tensile properties of the fibres were evaluated. The average tensile modulus and tensile strength of the banana fibres were 14.32 GPa and 384 MPa respectively. The composites were prepared by combining banana fibres and PP with 1-10 % weight content of fibres. Tensile moduli of the composites tended to increase with increasing amount of fibres. The composites, with all level of fibres, possessed higher tensile strength than PP matrix. However, when percent of fibres was increased, tensile strength decreased. Impact strength of the composites decreased with increasing amount of fibres. Optical microscopy photomicrographs of the composites with high fibre weight fractions showed some voids inside. The overall results revealed that banana fibres have potential use as reinforcing material for PP.

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