

However, natural fibre composites suffer from poor mechanical and interfacial properties. Here we report coating of graphene oxide (GO) and graphene flakes (G) onto natural jute fibres in order to improve mechanical and interfacial properties. The coating of graphene materials onto jute fibres enhanced interfacial shear strength by ~236% and tensile strength by ~96% more than untreated fibres by forming either bonding (GO) or mechanical inter-locking (G) between fibres and graphene-based flakes. This could lead to manufacturing of high performance and environmental friendly natural fibre composites that can potentially replace synthetic composites in numerous applications such as the automotive industry, naval vessels, household products and even in the aerospace industry.

TENSILE AND FLEXURAL PROPERTIES OF NATURAL FIBER REINFORCED POLYMER COMPOSITES: A REVIEW

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In recent years, researchers and scientists are facing problems in terms of environmental imbalance and global warming owing to numerous use of composite materials prepared by synthetic fibers and petrochemical polymers. Hence, an increasing attention has been devoted to the research and development of polymer composites reinforced with the natural fibers. The natural fibers are the most suitable alternative of synthetic fibers due to their biodegradability, eco-friendliness and acceptable mechanical properties. The natural fibers are attracting the researchers and scientists to exploit their properties by amalgamating them with the polymer. The properties of natural fiber reinforced polymer composites mainly depend upon various factors such as properties of fibers and matrices, fiber loading percentage, size and orientation of fibers, stacking sequences, degree of interfacial bonding, fiber surface treatments, hybridization and incorporation of additives and coupling agents. Tensile and flexural tests are the most important investigations to predict the applications of the materials. A good number of research has been carried out on tensile and flexural properties of natural fiber reinforced polymer composites. In this paper, a review on tensile and flexural properties of natural fiber reinforced polymer composites in terms of effects of fiber weight fraction, geometry, surface treatments, orientations and hybridization is presented. Moreover, recent applications of natural fiber reinforced polymer composites are also presented in this study

STUDY ON DURABILITY OF NATURAL FIBRE CONCRETE COMPOSITES USING MECHANICAL STRENGTH AND MICROSTRUCTURAL PROPERTIES

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Investigations to overcome the brittle response and limiting post-yield energy absorption