

WRITEUP ON RESEARCH TOPIC

BROAD AREA: BIOCOSITES

TENTATIVE TOPIC: DEVELOPMENT AND ANALYSIS OF LIGHTWEIGHT STRUCTURAL BIOCOSITE MATERIALS FOR AUTOMOTIVE APPLICATIONS

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Natural fibers are getting attention from various researchers and academicians to build an ecofriendly nature; hence bio-based composites are used. The use of lightweight materials in automobile industry is one of the best possible way to achieve fuel efficiency demand and reduce the environmental pollution from greenhouse gases created by automotive vehicles. The numerous advantages of natural fibres are low density, recyclability, biodegradability, relative ease of availability and low cost that have brought an attention for a variety of automotive applications. The emerging features of natural fiber reinforced with polymer composites are strongly influenced by the characteristics of their own constituents. The aim of this research is to use natural fibre reinforced polymer composites for automotive applications. There are several types of natural fibres with different properties influencing a specific use in all automotive applications. It is also proposed to chemically modify the fibres with different fibre treatment techniques and investigate their effect on the functional properties of the ensuing composites. The effects of chemical treatment on the mechanical, thermo-mechanical, dynamic mechanical, creep and other functional properties of composites will be analyzed. Finally based on the results obtained a comparative study will be carried out between the treated and untreated fibre reinforced composites for proposing possible application in the automotive sector. Furthermore, it is also proposed to study the life cycle assessment of the composite in the proposed application.