



## NATURAL FIBRE AND BIO-COMPOSITES

Elevated environmental awareness of the general public in reducing carbon footprints and non-naturally decomposed solid wastes has resulted in an increasing use of natural materials, biodegradable and recyclable polymers and their composites for a wide range of engineering applications. The properties of natural fibre reinforced polymer composites are generally governed by the pre-treated process of fibre and the manufacturing process of the composites. These properties can be tailored for various types of applications by properly selecting suitable fibres, matrices, additives and production methods. Besides, due to the complexity of fibre structures, different mechanical performances of the composites are obtained even with the use of the same fibre types with different matrices. Some critical issues like the poor wettability, poor interfacial bonding properties, degradation of fibre and matrix at the bond interface (a hydrophilic and hydrophobic effect) and damage of the fibre during the manufacturing process are the main causes of the reduction of the composites' strength. Mechanics on how these fibres can be used to reinforce polymeric-based materials are still unclear, different analytical and numerical studies have been in an ongoing process and hopefully, close form solutions could be found in the coming decade. This special session is used to group up all international experts and scholars in the fields of materials science, engineering and chemistry to explore further opportunities on the use of natural fibre, bioresins and biocomposites for real-life applications. The sub-topic will cover the following:

- Natural fibre composites
- Bioresins
- Environmentally friendly materials
- Eco-materials design for infrastructures
- Computational modelling
- Failure analyses and fracture behaviour
- Natural fibre for biomedical applications
- Economic benefits

### Chairs:

Professor Debes Bhattacharyya  
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