Exploration and potentiality studies on natural fibres as reinforcement in polymer composites

Proposal for application to Ph.D. program in the Department of Automobile Engineering, Kalasalingam Academy of Research and Education.

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There is research for many years on fibre reinforced polymer composites. Fibre reinforcement is very important one; it is classified into such as natural fibre and synthetic fibre. Natural fibers are considered over the synthetic fibres because of their comparable functional properties and renewable nature apart from low cost. Natural fibres are often used in automotive industries, packing industries, building materials and electrical industries. Material scientists are working on the exploration of various natural sources for the exploration of the fibres for the polymer composite applications. In this regard, many such fibres have been used for this purpose and to name a few are kenaf, pineapple, coir, bamboo, banana, hemp, sisal, etc. In this research it is proposed to explore and study the potentiality of a natural fibres from useless plants available (which is not useful in any ways). Thus, this research focuses on the extraction of new natural fibre from unused plants. The extracted fibre will be characterized for determining its functional groups, required mechanical properties and their suitability as reinforcement in epoxy matrix. Based on this the epoxy based natural fibre composites will be fabricated and characterized for the mechanical, dynamic mechanical, vibrational, thermal and water absorption properties. With the obtained results, the natural fibre composites will be compared with other counterparts and suitable application would be suggested.