

Design and Analysis of a Rear Bumper of an Automobile with a Hybrid Polymer Composite of Oil Palm Empty Fruit Bunch Fiber/Banana Fibres

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Abstract : This research investigated the design and analysis of a rear bumper of an automobile with a hybrid polymer composite of OPEBF/Banana fibre. OPEBF/Banana fibre hybrid polymers composite is of low cost, lightweight, as well as possesses satisfactory mechanical properties. In this research work, hybrid composites have been developed using the hand layup technique based on the percentage combination of OPEBF/Banana fibre at 10:90, 20:80, 30:70, 40:60, 50:50. 60:40, 70:30. 20:80, 90:10, 95:5. The mechanical properties in the context of compressive strength of 65MPa, a flexural strength of 20MPa, and impact strength of 3.25Joule were observed, and the simulation analysis on the induction of 500N load at the factor of safety of 3 was observed to have displayed a good strength suitable for automobile bumper with the advantages of weight reduction.

Keywords : OPEBF, Banana, fibre, hybrid

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