Smart ComBoo Using Nanofillers for Aerospace Structural Applications

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In the world today, the researchers' attention in material fields has shifted from composites to the development of hybrid composites. This transition can be said as a new evolution in materials history, which started from metal to composites and improved with hybrid composites. In the selection of natural fibres for the development of different composites, bamboo fibre was selected due to its high strength-to-weight ratio and abundance of the certain material throughout the tropical climate countries in the world . Besides long fibres of bamboo strands, bamboo can also be processed into bamboo powder. In contrast, which can be used as fillers in polymer composites. Recently, polymer nanocomposites have been fabricated using carbon nanotubes (CNTs) and nanocellulose from palm oil as reinforcement nanofillers. However, the effect of incorporating a CNT/polymer interface into hybrid composites with natural fibre is not clear. This study investigated the effect of using multi-walled carbon nanotube material (MWCNT) as the nanofiller on the tensile and flexural properties of bamboo/glass fibre hybrid composites. Composites containing various weight fractions of CNTs (0.1 wt.%, 0.3 wt.%, 0.5 wt.%, and 1.0 wt.%) were compared with the control hybrid composites. The hybrid composites were prepared with epoxy resin. The experimental results revealed an increase in the tensile strength of the composites with the addition of up to 0.5 wt.% CNTs (+7.73% over the control hybrid) Keywords : Bamboo, Carbon Nanotubes, Structural Applications, Nanocellulose

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