**Influence of nanoparticle reinforcement on the mechanical properties of carbon fiber/epoxy composites**

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**ABSTRACT**

Composite materials play a vital role in wide range of applications due to their adoptability to different situations and desirable properties. The Carbon fibre reinforced epoxy composites are extensively used in automotive industry because of their superior properties such as high specific strength, stiffness and chemical resistance. Since the epoxy resins are brittle in nature their toughness can be enhanced by filler materials. In this context, the current study aimed at improvement of mechanical properties of uni-directional carbon fibre reinforced composites. Uni-directional carbon fibre reinforced with nano aluminia composites were prepared by open mould process and the test samples were prepared according to ASTM standards. The prepared samples were investigated for the influence of alumina nanoparticles on tensile strength, flexural strength and hardness of the composites. The results show that the inclusion of alumina nano powder in resin has great impact on mechanical properties of the composites.

*Keywords: Nano alumina; Composite material; Nano materials*