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**DETERMINATION OF THE THERMAL CONDUCTIVITY OF SINGLE WALL
CARBON NANOTUBES TREATED AS A LONG FIBER FOR REINFORCING
ALUMINIUM MATRIX COMPOSITE**

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ABSTRACT

Nanotechnology seeks to discover and manipulate the properties of matter at the nanoscale in order to develop new applications across many fields, such as electronics, and materials. These materials and systems can be designed to exhibit novel and significantly improved properties, phenomena, and processes as a result of the limited size of their constituent. Carbon nanotubes (CNTs) have stimulated enormous interest for conductive; energy storage and energy conversion devices; and nanometer-sized semiconductor devices. In this paper, the thermal conductivity of CNT based Aluminum metal matrix are evaluated using a 3-D nanoscale representative volume element (RVE) using the finite element method (FEM). With additions of the CNTs in a matrix at volume fractions of only about 3%, 7% and 11%, the thermal conductivity of the composite can be increased.

Keywords: Carbon nanotubes; Nanocomposites; Thermal conductivity; Finite element method; Aluminum