

# Heat Transfer Improvement of a Thermal Interface Material for Heat Sink Applications Using Carbon Nanospheres.

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A functional material of carbon nano-composite is investigated to be utilised as a Thermal Interface Material (TIM) in heat sink applications. The TIM is a composite in a pasty form, based on carbon nanomaterials and Silicone heat transfer compound. The goal behind the implementation of the carbon nano-material in the TIM is to increase the thermal transfer from the electronics to the heat sink by the intermediary of aluminium oxide (AlO) posts. The main nano-materials investigated in this research work are the carbon nanospheres (CNS) of 450 nm diameters produced by Chemical Vapor Deposition (CVD). The study included also the investigation of the hollow carbon nanospheres (HCNS) and carbon nanotubes (CNT) in the composite. The heat transfer efficiency of the nano-composite is investigated by varying the ratio of the carbon nanomaterials within the composite, and the temperature flow in a duration of time to the heat sink with and without the carbon nanomaterials in the TIM is measured and compared.

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