* Investigation of Thermal Conductivity of Carbon Nanotube (CNT) Based Nanocomposites

Research Proposal:

Introduction:

Carbon nanotubes (CNTs) have exceptional thermal conductivity, making them ideal for thermal management applications. This research aims to investigate the thermal conductivity of CNT-based nanocomposites, exploring their potential for efficient thermal interface materials.

Research Objectives:

1. Synthesize CNT-based nanocomposites with varying CNT concentrations and matrix materials.

2. Measure the thermal conductivity of CNT-based nanocomposites using techniques like 3ω method or laser flash analysis.

3. Investigate the effects of CNT alignment, interface, and defects on thermal conductivity.

Methodology:

1. Synthesis: Use techniques like solution mixing, melt blending, or in-situ polymerization to fabricate CNT-based nanocomposites.

2. Characterization: Use techniques like XRD, TEM, Raman spectroscopy, and thermal conductivity measurements to study the properties of CNT-based nanocomposites.

Expected Outcomes:

1. CNT-based nanocomposites with enhanced thermal conductivity.

2. Insights into the effects of CNT alignment, interface, and defects on thermal conductivity.

Timeline: 2-3 years