

Characterization of Composite Heat Spreaders

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OBJECTIVE

- Low cost manufacture of diamond-metal composites has become commercially viable
- Leverage group's expertise and industry partnership for carbon nanotube (CNT) synthesis on composites

TECHNICAL CHALLENGES

- Low temperature growth and optimization of CNT growth parameters on composites
- Establishment of robust thermal characterization strategy for multi layered materials

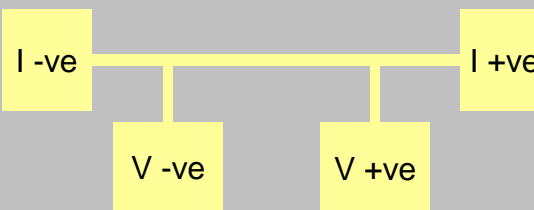
Combining industrial composite manufacturing with direct growth of CNTs will yield a cost-effective solution to replace copper with high conductivity composite heat spreaders and interfaces.

APPROACH

- Plasma enhanced chemical vapor deposition of CNTs
- 3-D method for thermal characterization
- Optimization of CNT growth parameters and materials selection for composites

METHOD FOR CONDUCTIVITY

Deposited 3- ω element



Composite substrate

SELECTED PUBLICATIONS

- J. Xu and T.S. Fisher, Int. J. Heat Mass Trans. 49 1658 (2006).
- X. Hu, A.A. Padilla, J. Xu, T.S. Fisher, K.E. Goodson, J. Heat Transfer, 118 (11) 1109 (2006).
- D.G. Cahill, Rev. Sci. Inst. 61 (2) 802 (1990).
- K. Goodson, O. Kading, M. Rosler R. Zachai, J. Appl. Phys. 77 (4) 1385 (1994).