Mechanical Engineering
Fall 2007 Seminars

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4:00 PM – 5:00 PM

ROOM: 224 MEC

"A novel Procedure for Improving the Dispersion of Carbon Nanotubes in Nanocomposites"

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ABSTRACT

Nanoparticles tend to form massive structures of highly sintered aggregates or bundles which make it difficult, if not impossible, to disperse homogeneously in viscous fluids, especially thermoplastic melts, in order to create nanocomposites with superior mechanical, thermal and electrical properties. More specifically, intrinsic van der Waals attraction among carbon nanotubes, in combination with their high aspect ratio and large specific surface area, often leads to agglomeration, thus preventing efficient transfer of their unique and superior properties to the matrix.

We have recently been investigating several new approaches to the manufacturing of carbon nanotube-reinforced polymer composites, including a novel methodology that assures uniform dispersion of the nanofillers in the polymer matrix. One novel approach that we have adapted is dry coating the polymer matrix with deagglomerated carbon nanotubes prior to processing in the melt state.
This talk reviews our research activities on this subject.

Biography
Dr. Albert Narh is an associate professor in the Department of Mechanical Engineering at the New Jersey Institute of Technology. He received his Masters and Doctorate Degrees from the University of Bristol, UK, and his BS from University of Ghana. He is the director of the NSF-REU site on Engineered Nanocomposite Particulate Materials at NJIT. He was past Chair, Technical Program Chair, and Award Committee Chair of the Polymer Analysis Division (PAD) of the Society of Plastics Engineers (SPE). He is currently the editor of PAD Review, the Newsletter of Polymer Analysis Division of the SPE.
Dr. Narh's scientific contributions have been in the area of Plastics Engineering and Processing, which involves experiments, modeling and simulations. His research is directed towards understanding the interrelationships between product properties and process parameters in order to develop models that can be used to predict these relationships. To this end, he has made major contributions in the areas of polymer nanocomposites, reactive processing, self-reinforcing polymer composites, stress-induced crystallization, and thermal contact resistance (TCR) in polymer processing. He has authored more than 91 technical publications.