



### PROGRAM

11:00 - 11:45 p.m. Lecture

11:45 - 12:00 p.m. Q&A and Discussion

### ABSTRACT

Functional materials are indigenous to nature. From a morphological standpoint, these materials are designed such that every feature is involved in its functional capability. Materials produced in the research lab and industries have yet to capture the kind of functional efficiency exhibited in nature. The field of nanotechnology has ushered in a new era for the design and processing of materials. The abundance of nano-materials available provides endless combinations for imagining and constructing nano-composites which have applications within one or more field of study. In addition, this field has also opened new opportunities of educational gleaning for future generations of scientist. The nano- and macro-scale properties of polymers have long been studied and much is already known. However, the mishmash of polymer with nano-particles has now broadened our view of how these macromolecules can be influenced into novel architectures at the nanoscale to produce new structures and enhancement of bulk properties. Polymer self-organization/assembly directly influenced by nano-particles provides a basis to approach many fundamental research questions including the design for new high-performance composites, energy devices, as well as bio-functional materials. This talk explores some of the experimental work that has looked at how nano-materials like carbon nanotubes greatly affect the morphology of polymers in nano-composites, which in turn translate into changes in the properties of the materials produced. Understanding these processes and utilizing these designs has the potential to reshape our view of how to incorporate polymers into nano-composites to tailor bulk applications for specific functionalities. Such intelligent design combines both top-down and bottom-up approaches for erecting nano-composites. In our world, new product design, development, and optimization are in constant demand and these materials find their beginnings in the laboratory. The potential implications of applying technology to the nano world breathe new life into researching materials for applications in all engineering disciplines.

### SEMINAR TITLE

## **"Exploring Nanoscale Interfacial Morphology in Polymer Nano-composites"**

### SEMINAR SPEAKER

## **Dr. Marilyn Minus**

**Research Assistant**

**School of Polymer, Textile, and Fiber Engineering, Georgia Institute of Technology, Atlanta, GA**

### BIOGRAPHIC PROFILE



Dr. Marilyn Minus' research is focused in the area of fabrication and characterization of advanced high-performance polymer nanocomposites. Polymers of interest include mainly those of linear architectures and biopolymers. Her work has looked at the interfacial interaction of these polymers with carbon nanotubes to understand morphological behavior

in high-performance composites.

Marilyn has published 15 peer reviewed articles in the area of polymer nano-composite research, has 11 conference presentations, and has been invited to present her research work at both U.S. and International Universities. Her work has also received national attention. Marilyn has won first place in several research competitions, including the American Society for Composites' 2004 Poster Competition, the 2005 Techsymposium Graduate Research Oral Presentation, the National Textile Center's 2005 Forum Student Speaking Competition, and the Society for the Advancement of Material and Process Engineering 2005 University Research Symposium's Technical Conference and Exhibition. She was also nominated and elected to give a talk at the 2006 spring American Chemical Society Meeting as a part of the Excellence in Graduate Research Symposium sponsored by the American Chemical Society Division of Polymer Chemistry. Marilyn received her Bachelors of Science in Textile and Fiber Engineering from Georgia Institute of Technology in 2002 and also completed her Ph.D. in Polymer Engineering with minor in Materials Science from Georgia Institute of Technology in 2008. She is currently a research scientist at Georgia Tech.