



# ASM - Atlanta

Newsletter of the Atlanta Chapter of ASM International  
<http://www.asm-atlanta.org/> Normally Meets 3rd Tuesday  
March, 2005      Volume 11      Number 6

**Meeting this next Tuesday!**

## **March Meeting of the Atlanta Chapter of ASM**

**Tuesday Evening, March 15, 2005  
In the Georgia Tech School of Materials Science & Engineering  
Located in the Love Building - 3rd Floor Atrium**

***DNA-Mediated Particle Assembly***

**presented by**

**Valeria Tohver Milam**

**Assistant Professor,  
School of Materials Science and Engineering  
Georgia Institute of Technology, Atlanta**

also

***Uniform Directional Alignment of Single-Walled  
Carbon Nanotubes in Viscous Polymer Flow***

presented by

**Erin L. Camponeschi**

**A 10-minute Ph.D. graduate student presentation  
School of Materials Science & Engineering, Georgia Institute of Technology**

## Tuesday Evening, March 15, 2005

**Wine Reception & Social:** 6:00 PM  
**Dinner:** 6:30 PM  
**Introductions & Business:** 7:15 PM  
**Ms. Camponeschi's Presentation:** 7:30 PM  
**Dr. Milam's Presentation:** 7:45 PM  
**Meeting adjourns by** 9:00 PM

**Dinner Costs:**

\$20.00 for Professionals, \$6.00 for Students

**WHERE** -- The GA Tech School of Materials Science & Engineering, in the J. Erskine Love Manufacturing Building.

**Map:** <http://www.asm-atlanta.org/>

**Menu:** Chicken Tuscany, dinner rolls w/butter, house salad w/basil vinegar, coffee (regular & decaff), iced tea, water. Brownies w/Nuts. Veggie dinner upon request

**Reservations:** RSVP - by Monday, March 14 to **Marlene White**,  
Tel: (404) 894-2850, Fax: (404) 294-9140, [marlene.white@mse.gatech.edu](mailto:marlene.white@mse.gatech.edu)

**Note:** If it is necessary for you to eat elsewhere, please know that you are very welcome for the program. Come & meet with your technical friends and make new ones.

-----

### **About the Presentation by Dr. Milam:**

The phase behavior, structure, and properties of colloidal suspensions are governed by the balance of interparticle forces. Past studies have focused on nonspecific colloidal forces such as van der Waals, electrostatic and steric interactions. Recent interest in bio-inspired assemblies has motivated studies using specific, attractive forces derived from biological systems. Here, we assembled microspheres using DNA hybridization. The degree of specific attraction between complementary beads depends on the number of matching oligonucleotide pairs, the number density of hybridized strands between particle surfaces, the solution ionic strength and the temperature conditions. A variety of colloidal structures such as chains of alternating large and small particles are formed by exploring additional experimental variables such as particle size asymmetry and particle number ratio.

### **Biosketch of Dr. Milam**

**Valeria Tohver Milam** received her B.S. in Materials Science and Engineering with Honors from the University of Florida in 1993. She specialized in metallurgy and also received a minor in Portuguese. For her master's degree in MSE at the University of Illinois, Urbana-Champaign, she investigated the properties of semiconductor colloids templated in a surfactant mesophase. As an intern at Sandia National Laboratories in 1997, she formulated ZnO pastes for solid freeform fabrication, specifically, micropen printing. She then completed her doctoral work at UIUC studying the phase behavior, structure and properties of nanoparticle-microsphere suspensions. As a postdoctoral associate, she studied DNA-mediated colloidal assembly at the University of Pennsylvania. She joined the MSE department as an assistant professor at the Georgia Institute of Technology in July 2004.

### **About the presentation by Ms. Camponeschi:**

In this study, the effects of shear flow on the alignment of dispersed single wall carbon nanotube solutions were studied. Two different solutions were compared; a dispersed solution of carbon nanotubes using an anionic surfactant and single wall carbon nanotubes dispersed in an anionic surfactant and weak polymer. It was determined that the addition of the weak polymer increased the ability to create alignment of the carbon nanotubes. The carbon nanotubes were found to be uncoiled and aligned within the solution, when analyzed with a low-resolution transmission electron microscope.

**Erin Camponeschi** is from Batavia, IL. She received her bachelor's degree in 2003 from Iowa State University in Materials Engineering where she was an undergraduate research assistant in a bioceramics laboratory. She came to Georgia Tech just after graduate in the Fall of 2003 and is currently co-advised by **Dr. Hamid Garmestani** and **Dr. Rina Tannenbaum** working with carbon nanotube composites and their applications.

### **Atlanta ASM Chapter Scholarship Awards**

Three Georgia Tech materials students will be presented with scholarships checks of \$500 each from the Atlanta Chapter of ASM during our March 15 meeting. The three outstanding students are **Stanley Davis**, **Gideon Duvall** and **Anne Owensby**.

### **April Meeting - ASM Trustee Visit**

We will have our annual ASM Trustee visit next month. **Dr. William E. Frazier**, of NAVAIR, Patuxent River, MD will be with us to review the operations of both our Atlanta professional and GT student ASM Chapters on April 19. He will then make a presentation at our regular chapter meeting on that evening on:

### **Naval Aviation Materials Technologies**

Please respond if you would like to arrange a conversation with **Dr. Frazier** during the day of his visit with our chapter. Dr. Frazier has demonstrated a strong knowledge and interest in the operation of individual ASM chapters.

**Dr. Frazier** has extensive experience with ASM Chapters as well as being an outstanding researcher and practical engineer in solving the many materials problems associated with operating high performance aircraft off naval aircraft carriers. You will find that his experiences are rich with extraordinary stories and statistics from many life-threatening situations involving the materials of these structures operating in particularly hostile environments.

### **Features of ASM-Atlanta**

#### **The Newsletter of the Atlanta Chapter of ASM International**

- Program Notes for Meetings
- Chairperson's note to members.
- Career Development: job opportunities or jobs needed
- Company Feature:
- Technical Features:
- Education Feature: Materials course offerings.
- Georgia Tech Student Chapter News

- Member News
  - Special Events, Awards & Honors.
  - New Members
  - Deaths
  - Transitions
- ASM International News
- Advertisements
- Outreach (ASM members to Schools, Scouts, etc.)

**Send information, articles or suggestions to:**

**Bill Livesay**, Editor *ASM-Atlanta*.

775 Upper Hembree Road

Roswell, GA 30076

Livesay3@bellsouth.net, or b.livesay@gtri.gatech.edu

770-664-8742