



ASM - Atlanta

Newsletter of the Atlanta Chapter of ASM International
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Volume 8

Number 1

November Meeting of the Atlanta Chapter of ASM

Tuesday Evening, November 20, 2001
At the Georgia Tech Ferst Place Cafeteria,

PROGRAM

Aerospace Materials Programs Underway at Georgia Tech

presented by **Dr. Steve JOHNSON**
Professor, School of Material Science & Engineering
& George W. Woodruff School of Mechanical Engineering
Georgia Tech, Atlanta, GA 30332-0245

also

Opportunities for Materials Scientists & Engineers in Micro/Opto-Electronics

A 10 minute Ph.D. student presentation by Yongqian "Jack" Wang
School of Materials Science and Engineering
Georgia Institute of Technology

ASM Chapter Meeting
Tuesday Evening, Nov. 20, 2001

Dr. Johnson's Presentation: 8:15 PM
Costs: \$20.00 Regular, \$6.00 Students

Wine Reception & Social: 6:00 PM
Dinner: 7:00 PM
Introductions & Business: 7:50 PM
Mr. Wang's Presentation: 8:00 PM

MENU: A dinner menu of Georgian Pecan Crusted Chicken, tossed salad, vegetable, roll and butter, coffee, iced tea & pecan pie desert. Vegetarian dinner available upon request.

WHERE -- Georgia Tech Ferst Place Cafeteria, 3rd floor of Student Center Building (next to the campanile). Parking is available at the Student Center visitor parking lot off Ferst Drive.

Reservations: RSVP - by 11:00 AM on Monday, Nov. 19, to Marlene White, Tel: (404) 894-2850, Fax: (404) 294-9140, marlene.white@mse.gatech.edu

Note: A policy of ASM International is that one never pays to attend a regular Chapter meeting program. So, if it be 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.

Abstract: Aerospace Materials Programs Underway at Georgia Tech

This will be an overview of research activities in Dr. Steve Johnson's research group at Georgia Tech. Several projects will be reviewed to point out the problems/applications and approaches used. The following projects will be discussed:

- * Small Crack Growth in Helicopter Rotor Hub Materials
- * Probabilistic Fracture Mechanics Approaches to Life Prediction of Gas Turbine Blades
- * Composite Facesheet debonding from Honeycomb Core for Boeing 757 Applications
- * Nanotube Reinforcement of Polymers for Adhesives Applications
- * High Temperature Polymer Matrix Composites for Super Sonic Commercial Airliners
- * Materials Research for the Next Generation Space Shuttles
- * Composite Materials for Reinforcement of Aging Infrastructures

Biography:

Dr. WILLIAM STEVEN JOHNSON "Steve"
Professor, School of Material Science & Engineering & George W. Woodruff School of Mechanical Engineering, Georgia Tech, Atlanta, GA 30332-0245 (404) 894-3013, e-mail: steve.johnson@mse.gatech.edu

EDUCATION:

- 1979 - Doctorate of Philosophy in Solid and Structural Mechanics. Duke University, School of Engineering, Durham, NC.
- 1975 - Master of Science Degree in Engineering Science and Mechanics. Virginia Polytechnic Institute and State University, Blacksburg, VA.
- 1971 - Bachelor of Science Degree in Engineering Mechanics. Virginia Polytechnic Institute and State University, Blacksburg, VA.

PROFESSIONAL EXPERIENCE:

- 1979- 1994: NASA-Langley Research Center, Mechanics of Materials Branch, Materials Division, Hampton, VA. Group Leader for Mechanics of High Temperature Materials.
- 1975 - 1977: General Dynamics, Fort Worth, TX. Structures Engineer in the Fatigue and Fracture Group.
- 1972 - 1974: Naval Ship Research and Development Center, Bethesda, MD. Mechanical Engineer in the Fatigue and Fracture Analysis Group of the Advanced Ship Division.

RECENT LEADERSHIP POSITIONS:

- **Editor-in-Chief** of the *Journal of Composites Technology and Research* (1990-2001).
- **Director** *Composites Education and Research Center* at Georgia Tech (1997 -)
- **Associate Director** *Mechanical Properties Research Laboratory* at Georgia Tech (1994 -)
- **Chairman** of the High Temperature Composites Division of the American Society of Composites (1995 -)
- **Chairman** of ASTM Subcommittee D-30.07 on Metal Matrix Composites (1990-1998).
- **Chairman** of the International VAMAS Technical Working Area (TWA-15) On Metal Matrix Composites (1992- 1997).
- **Program Manager** for Materials Durability HSR/HSCT Program (1992-1994).
- **Principle Investigator** of Life Prediction Methodology for the NASP (1987-1994).
- **Chairman** of the National HSCT Mechanics and Durability of Materials Working Group (1990-1994).
- Member of the **Executive Committees** of ASTM Committees E-8 on Fatigue and Fracture Testing and D-30 on High Modulus Fibers and Their Composites (1985-2000).
- **Fellow** of the ASTM.

PUBLICATIONS:

- Over 150 Technical Publications in the area of Fatigue and Fracture of Advanced Materials.
- Over 100 Technical Presentations (many invited Keynote presentations).
- Editor of six Technical Books.
- Written five invited Book Chapters.

Abstract: Opportunities for Materials Scientists & Engineers in Micro/Opto-Electronics

As micro/opto-electronic devices continues shrinking in size and dimensions, material scientists and engineers have been facing challenges, such as development of low-k and high-k dielectrics, MEMS and MOMS smart packaging, new concepts in the design of devices. In this short talk, I will present some typical materials problems to illustrate the opportunities where a materials scientist or engineer can make his great contributions to the development of microelectronic theories and innovation of next-generation devices.

Biography: Yongqian "Jack" Wang is currently working towards his PhD in the School of Materials Science and Engineering, Georgia Institute of Technology. His Ph.D. dissertation work is on HRTEM characterization of mixed-anion semiconductor compound quantum

structures, where his main focuses are on (1) materials problems related with anion exchange reactions, (2) control and modify vertically self-organized quantum dot structures by anion exchange, and (3) atomistic mechanisms of anion exchange in the heteroepitaxy of mixed anion structures.

Mr. Wang earned BS and MS degrees in 1985 and 1988, respectively, in Materials Science and Engineering from Harbin Institute of Technology, China. His major research areas include:

1. MBE Semiconductor Heterostructures

Interfacial structure of quantum III-V semiconductor heterostructures

2. Nano-materials & -Structures

Synthesis of nanoparticles; Self-assembling:
Photonic crystals

3. Smart Materials & Structures

New shape memory alloys (SMAs) development
SMA applications in Space, MEMS
Fundamentals, e.g. crystallography of martensitic transformations, SME mechanisms

4. Mechanical alloying

Aluminum alloys, Titanium alloys, intermetallic compounds

From 1988 to 1996, Mr. Wang worked at the Analysis and Measurement Center, where he managed the MicroAnalysis Lab. He also managed the Smart Materials Research Group from 1993 to 1996. Mr. Wang has more than 30 publications and received several awards. Tel: 404-385-0326, gt7189b@prism.gatech.edu

**Atlanta ASM Chairman's Message
By Kim Bryan Spinsby**

We're starting a fresh year with new by-laws and a new slate of Officers, but still with the continued commitment and experience of many that have served and continue to serve in the Atlanta Chapter well for many years. A special thanks to the past Chair, Dr. John Mihelich, for his exemplary leadership in 2000-2001. A very fine job not only in leading, but in continuing the development of our new leadership in the traditions of many Atlanta ASM Chairs before

him. Under his leadership, we again were recognized by ASM International as **Five Star Award Chapter**.

Each Leader brings a personal theme. My personal emphasis is on the collaboration and networking with allied engineering organizations. Atlanta Chapter's ASM members involve many disciplines. ASM members are the materials specialists for spanning an extremely wide collection of sciences and disciplines. We are striving to expand the recognition of material sciences within the many associated disciplines, and to grow synergistically with them.

Each organization also has a core long-term culture, and values that it embraces. The Atlanta Chapter of ASM has a rich history of participation and commitment with the educational institutions and resources. We remain heavily committed to our relationship with the educational community. The Atlanta Student Chapter of ASM International has been recognized as one of the finest in the country.

We currently have 273 members not counting the Student Chapter membership. Fifty-six of these are Life or Retired members, and our Treasurer, James Lane, reports that the Chapter is in good shape financially. Last year our Membership Committee Chair, Subu Shanmugham, recruited our first sustaining member, Chromalloy. Dr. Jud Ready, our new Membership Chairman, is leading the way, and striving to bring in several additional corporations in this program year of 2001-02. Your Executive Committee has earmarked the lion's share of the Sustaining Members fees to be placed in the Scholarship Fund to endow this worthwhile effort. Please contact Jud about additional information concerning Sustaining Membership.

Our September dinner meeting attendees, and there were about 25, enjoyed hearing about Thermal Spraying Technology as presented by our speaker, Mr. Bill Dalzell, Director of MicroCoating Technologies. Due to the air travel complications during those first few days following September 11, Mr. Dalzell kindly, and

with strong technical ability, stepped in for the presentation in place of the intended speaker who could not travel here.

Our 2001-2 Vice Chair of Programs, Subu Shanmugham organized an excellent tour of the ACT circuit assembly facility in Lawrenceville for October. The tour focused on electronic circuit and assembly work, with special interest for those of us who wanted to see and experience the practical application of materials in this electronics environment.

We successfully placed a local high school student in the ASM Materials camp again this year. Josh Sofsky attended Materials camp West in Seattle. In addition, George Kremer attended ASM Leadership Week as our Chapter's representative during the summer and participated in a number of valuable training sessions. George then was present to receive our 5 Star chapter award at the banquet for Leadership Week at Materials Park, Ohio in August.

Let me say a few words about our dinner meetings and tours. Please remember that the Chapter must make a guaranteed reservation for the number of attendees at the dinner. If you make a reservation and are a no-show, the Chapter must still pay for that meal. While we may be able to handle one or two walk-ons, the restaurant prepares only sufficient food for the reserved number and just a bit more. The best practice is to make an early reservation, come to the meeting and enjoy the evening with your friends and colleagues.

Many of us have found that our meetings and tours offer an excellent opportunity to network with peers from Tech and from industry. It's a great way to stay on top of what is happening locally in the materials field. Why not bring a colleague along too, to experience the fellowship of your ASM Atlanta Chapter! So put a note on your calendar that ASM Atlanta has a gathering the 3rd Tuesday of every month. See you there!

A Materials Camp Letter

The following is a note received recently by Professor Naresh Thadhani from Kimberly Liverpool, who was selected by the Atlanta Chapter as our recommendation to attend Materials Camp during the summer of 2000. Prof. Thadhani was the Chapter Chairman during the spring when Kimberly was selected.

Hello Dr. Thadhani,

How are you? I trust that you are in good health. Things have been quite hectic lately concerning my college choices and applications. GA Tech was first on my list, I turned in the application yesterday and my counselor assured me that it would reach the Admissions Office on time. I thought that you would like to know that I am interested in pursuing a degree in Materials Science. I look forward with a hopeful desire to attending GA Tech next fall. Hope to see you soon, God bless you!

Sincerely,
Kimberly Liverpool.

Christmas Party & Meeting

Please mark your calendar now to attend the ASM Christmas Party & Meeting on December 11, 2001.

We will meet at the Southeastern Railway Museum in Duluth, GA to enjoy learning more about the history of a transportation technology that is over 150 years old, yet is intrinsically so energy and personnel efficient that it still offers tremendous advantages compared to what most of normally employ today.

Details will come to you in the next newsletter, and via email provided we have your address.

Atlanta Chapter Sustaining Memberships

The Atlanta Chapter of ASM is strongly encouraging companies and other organizations having materials related interests to sign up with

the Chapter's Sustaining Membership program. **Chromalloy Georgia** became the first **Chapter Sustaining Member** of our ASM-Atlanta Chapter during the Spring of 2001. Contact the Membership Committee Chair: **Jud Ready**, MicroCoating Technologies, 3055 Northwoods Circle, Norcross, GA, 30071, 770-797-3927, Ex. 109; jready@microcoating.com. Your organization's commitment to this program will provide a valuable contribution to the education and development of young materials scientists and engineers.

Future Programs for the ASM-Atlanta Chapter Dinner/Lunch Events during the Chapter Year of 2001 – 2002

by Subu Shanmugham
Program Chairman

Nov. 20, 2001: **Aerospace Materials Programs Underway at Georgia Tech**, Dr. Steve JOHNSON

Dec. 11, 2001: **Rail Road Museum Tour and Christmas Party**

Jan. 15, 2002: **Tribology**, Dr. Peter Blau, Oak Ridge National Laboratory

Feb. 2002: Joint Meeting with another technical society.

Mar. 2002: Industry Night

2002: Trustee Presentation

May 2002: To be Decided

September Event Summary

Mr. Bill Dalzell, Director of MicroCoating Technologies, Atlanta, gave the September 18th presentation on behalf of Mr. William Jarosinski, Manager of Praxair Surface Technologies, Indianapolis. Mr. Jarosinski couldn't make it to the meeting due to the travel restrictions imposed by his company due to the tragic September 11th events. Bill did a great job covering for William

and gave the talk entitled "The Manufacture of Advanced Powders". His presentation gave very good coverage of advanced metal alloy powders made via thermal spray. In particular, the inert gas atomization method was highlighted in comparison to water atomization. Several examples were provided that reflected the importance of these metal alloy powders in high temperature applications including turbine blade protection. The talk was very well received by the audience.

October Event- Tour of ACT Manufacturing

On October 11th, a group of 12 representing ASM visited ACT Manufacturing. ACT is a contract manufacturing company that produces printed circuit boards for different electronic vendors. For the tour, everyone was required to don the clean room attire. The tour started off with an overview of ACT given by Mr. John Quinn. Subsequently, the group was shown the assembly line where the board starts off unpopulated and by the time it passes through a series of 4-6 machines, the board is filled with electronic components including integrated circuits, resistors, capacitors, transistors, connectors, inductors, etc. The quality assurance protocol comprised of both manual and non-destructive machine inspection (such as X-rays). The tour lasted approximately 1 hour.

We strongly encourage your program suggestions and comments. Your suggestions help us to know what you want or need, and they may provide entirely new ideas for future programs. Please make them to the Chapter's Vice-Chairman for Programs, Subu Shanmugham, MicroCoating Technologies, 5315 Peachtree Industrial Blvd, Chamblee, GA, 30041, 678-287-2417; Email: subu@microcoating.com

**Update Your Record
at ASM International**
<http://www.asminternational.org>

ASM International requests that each member go to the ASM web site in order to verify your addresses, contact details, email, etc. You will use your member number, found on your ASM Membership card or on a mailing label from ASM, to access your personal record. Find this page under "For Members Only".

ASM-Atlanta

The next scheduled issue of the newsletter, *ASM-Atlanta* will be in December 2001. However, as the chapter learns of seminars or other programs in the Atlanta area of interest to the membership, you may receive email notices of these events. However, we need your email address.

Newsletter email; If you are not receiving this Newsletter via email, it is only because we don't know your email address. If NOT receiving the email version, please send an e-message to Bill Livesay at b.livesay@gtri.gatech.edu with one word, "ASM", as both the subject and body of the message. Ultimately, we would like the distribution to be nearly all email, but we currently have fewer than half of the membership's correct email addresses.

The Features of ASM-Atlanta include:

- Program Notes for Meetings
- Chairperson's note to members.
- Career Development: job opportunities or jobs needed
- Company Feature: Short description of what a particular company does - that is informative to other members - not just an advertising item
- Technical Features: Short (one page or less) descriptions of an interesting technical or scientific materials topic - perhaps from a manufacturing or research development.
- 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.)

Please contribute information for inclusion in the newsletters. For example, you may contribute a short (one page or less) technical item which would be of interest to your fellow members - or suggest who might write an article. You may want to say something about the work of your organization or company that would be of interest. Please contact Bill Livesay (b.livesay@gtri.gatech.edu, or livesay3@bellsouth.net) for both ads and news input for the next *ASM-Atlanta*.

Atlanta ASM Chapter Officers

Chairman: Kim B. Spinsby,

Siemens Energy and Automation, 100 Technology Dr., Alpharetta, GA, 30005-0039, 770-740-3185V; 770-740-3050F, kim.spinsby@sea.siemens.com

Vice-Chair, Academic Affairs: Steve Johnson

Georgia Tech Mat. Eng. & Sci. Dept., Atlanta, GA 30332-0245; 404-894-3013V; 404-853-9140F, steve.johnson@mse.gatech.edu

Vice-Chair, Industrial Relations: George Kremer

1220 Lochshyre Way, Lawrenceville, GA 30043-6454 770-339-9938V; 770-339-6792F, gwkremer@bellsouth.net

Vice-Chair, Programming: Subu Shanmugham,

MicroCoating Technologies, 5315 Peachtree Industrial Blvd, Chamblee, GA, 30041, 678-287-2417; subu@microcoating.com

Secretary: Gautam R. Patel, Georgia Tech Research Institute, Material Analysis Center

Baker, #273, Atlanta, Georgia 30332 404 894-3635V; gautam.patel@gtri.gatech.edu

Treasurer: James F. Lane, Applied Technical Services;

1190 Atlanta Industrial Drive, Marietta, GA 30066 770-218-2180 x3041V; 770-424-6415F, jlane@atslab.com

Chapter Academic Advisor: Ashok Saxena, Georgia Tech Mat. Eng. & Sci. Dept., Atlanta, GA 30332-0245

404-894-2888V; 404-894-9140F, ashok.saxena@mse.gatech.edu <http://www.mse.gatech.edu/faculty/saxena/sax.html>

Membership Committee Chair: Jud Ready

MicroCoating Technologies, 3055 Northwoods Circle, Norcross, GA, 30071, 770-797-3927, Ex. 109; jready@microcoating.com

GT ASM Student Chapter President: Ben Church

Georgia Tech Student Chap President, Graduate Student. Materials Science & Engineering, Atlanta, GA 30332-0245 404-894-9140; 404-894-5956F; gte443r@prism.gatech.edu

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John L. Mihelich: Immediate Past Chair Finance

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Previous Chairs Advisory Group:

Naresh Thadhani, Ed. Com. Chair

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ASM-ATLANTA

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