



# ASM - Atlanta

Newsletter of the Atlanta Chapter of ASM International  
<http://www.asm-atlanta.org/> Normally Meets 3rd Tuesday  
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**Important Notice:** To receive future issues of the *ASM-Atlanta* Newsletter through US Mail, you must request this service by a note to the *ASM-Atlanta* Editor using either US Mail, email or voice. The Executive committee of the Atlanta Chapter of ASM has decided to rely on electronic publishing of *ASM-Atlanta* in the future due to significant increasing costs for both postage and printing during the last couple of years. Members who desire a hard copy through the US mail can simply request this service by sending the request to the ASM-Atlanta editor. Most of the active ASM members have been receiving the Newsletter via email - and many have expressed a preference for only receiving the electronic version of the newsletter.

Your Executive Committee certainly doesn't wish for this new procedure to be an inconvenience for any of our membership. *ASM-Atlanta* is also available on the Atlanta Chapter web site, along with the library of past issues. Also, be sure that we have your correct email address. **Address your information to Editor Bill Livesay**, 775 Upper Hembree Road, Roswell, Ga 30076, or 770-664-8742, or [b.livesay@grti.gatech.edu](mailto:b.livesay@grti.gatech.edu), or [livesay3@bellsouth.net](mailto:livesay3@bellsouth.net). Also, please feel free to express your opinions (or advice) about this or any other activity of YOUR materials technical society, ASM. The purposes of the Atlanta Chapter of ASM are to serve its members and the technical community of the Atlanta Area.

## September Meeting of the Atlanta Chapter of ASM

Tuesday Evening, September 17, 2002  
At the Georgia Tech Ferst Place Cafeteria,

### Prognostics for Gas Turbine Reliability

presented by

**Professor Ashok Saxena**

Chair, School of Materials Science & Engineering,  
Georgia Tech

also

**Creep Behavior of GTD111**

by  
**Alejandro Ibanez**

**A 10-minute Ph.D. graduate student presentation**

School of Materials Science & Engineering, Georgia Institute of Technology

**Tuesday Evening, September 17, 2002**

**Wine Reception & Social: 6:00 PM**  
**Dinner: 6:30 PM**  
**Introductions & Business: 7:15 PM**  
**Student Presentation: 7:30 PM**  
**Dr. Saxena's Presentation: 7:45 PM**  
**Meeting adjourns by 9:00 PM**  
**Costs: \$20.00 Regular, \$6.00 Students**

**Dinner Menu: Southern Cuisine:** Tossed Garden Salad, Okra, Corn & Tomato Salad, Fried Chicken with Gravy, Black-eyed Peas, Green Bean Casserole, Mashed Potatoes with Butter, Corn Bread, Fruit Cobbler, Sweet Tea, Coffee  
Vegetarian or special diet dinners upon request. Wine - extra.

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

**Reservations:** RSVP - by noon on Monday, September 16, to **Marlene White**, Tel: (404) 894-2850, Fax: (404) 294-9140, 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.

### **Abstract:**

**Prognostics for gas Turbine Reliability:** The performance of natural gas-fired turbines has steadily improved with the continuous development of advanced materials and design concepts for hot gas path components. The use of directionally solidified (DS) superalloy with adequate coatings has significantly improved the limitations inherent to equiaxed materials in the areas of oxidation and corrosion resistance, thermal and low cycle fatigue resistance, creep resistance and high cycle fatigue resistance. Since these materials are being pushed to the limits of their capability, accurate mathematical models are needed to predict the lives of hot-section components to prevent unscheduled outages due to sudden failures. There is also a need to develop realistic inspection intervals to further safeguard against sudden failures, but these recommended inspection intervals cannot be too frequent to maintain economic viability. Therefore, the importance of accuracy in the models for predicting in-service performance cannot be over-emphasized. This presentation will describe some of the recent work at Georgia Tech on the development of physically based models for predicting crack initiation and crack growth in the complex loading environment of industrial gas turbines.

### **Message From the Chapter Chairman Professor Steve Johnson**

Greetings to all the ASM Atlanta Chapter Members: We are standing at the beginning of a new meeting year and I am proud to serve as the Chapter Chair. With the help of several members of the Executive Committee we have lined-up an exciting agenda for the coming year. We hope to have several joint meetings with fellow materials related professional societies in the Atlanta area. To date we plan to meet with SAMPE, SME, AIAA, and AWS. These joint meetings should be super for networking and good fellowship. My aim is to make all our meetings informative, enjoyable, and a plus to your professional endeavors.

In addition, the chapter is working hard (led by last year's chair, **Kim Spinsby**) to offer an Introduction to Metallurgy course. Several chapter members will teach this. If you know of someone who may be interested in taking this course, please have him or her contact Kim.

On the local level at Georgia Tech, one of our MSE Seniors, **Morgan Mager**, has won the George A. Roberts Scholarships (\$6,000 each) from ASM! Morgan also serves as the ASM Student Chapter Chair at Georgia Tech.

Another MSE Senior, **Jenny Harrison**, won a \$2,000 scholarship from TMS! So our Georgia Tech students are making it big in the Materials Community.

If any of you have any comments, suggestions or questions about the local ASM Chapter please feel free to contact me at 404 894-3013 or at [steve.johnson@mse.gatech.edu](mailto:steve.johnson@mse.gatech.edu). I look forward to seeing you soon at our Chapter meetings.

Best wishes,

Steve Johnson

## **OCTOBER MEETING**

**Tuesday, October 15th, 6:00 pm. at GA Tech.**

### **Friction Stir Welding Modeling:**

Processing and Weld Performance

**Dr. Anthony (Tony) P. Reynolds**

Department of Mechanical Engineering

University of South Carolina

**Friction Stir Welding** is a new process, combines spinning and welding, and Dr. Reynolds is one of the pioneers. The Atlanta Chapter of ASM International will be joint host with the Atlanta Chapter of the American Welding Society (AWS) and with the Atlanta District of Precision Metal forming Association.

## EDUCATIONAL OUTREACH ACTIVITIES

by Professor Naresh Thadhani

The summer of 2002 included a number of outreach activities that involved the participation of Atlanta ASM Chapter members. The “Exploring Engineer Academy” sponsored by the Georgia Boy Scouts Association was held on the campus of Georgia Tech, from June 3 to 7. The Academy involved the participation of about 15 high school students (9-12 graders) in this week-long residence camp. The first day was devoted to “The World of Composite Materials,” and was organized by several graduate students from the School of Materials Science and Engineering (MSE). The students learned about processing, structure, properties, and design of composite materials, through morning presentations and demonstrations given by **Ben Findley**, **Greg Kennedy**, **Tim Long**, and **Scott Lieberman**. The afternoon involved a design contest led by **Jennifer Jordan**, in which the students worked in teams and designed a composite fishing rod out of materials provided to them which included soda-pop straw, string, tape, glue, rubber bands, paper clips, etc. This was an excellent group of students and they came up with really creative and competitive designs.

Our Vice-Chair for Programming, Associate Professor **Janet Hampikian**, was involved in Georgia Tech’s CEISMC “Summerscape” program for High School teachers (June 3-7). She, in conjunction with **Kip Findley**, **Alejandro Ibanez** and **Naresh Thadhani**, presented a week long course (with lectures and demonstrations) on materials science and engineering to a group of high school teachers, who in turn presented the same material to approximately 200 middle and high school students in the following four weeks. We also continue to host the NSF-funded Research Experiences for Teachers (RET) program. In its 3<sup>rd</sup> year, the 8-week long RET program (June 3 to July 26) involved the participation of 5 Atlanta area High School teachers, some of

whom returned for the second time. The teachers worked with faculty and their graduate students on their on-going projects, assisting them with sample preparation or data gathering, while at the same time developing materials-based modules to take back to their schools to implement in their curriculum. The faculty mentors were **Steve Johnson** (ASM chapter chair), **Tom Sanders**, **Ashok Saxena**, **Chris Summers**, and **Rina Tanenbaum**, all of MSE. The teacher participants were **Gary Loveless** (Central Gwinnett HS), **Beth Collingsworth** (East Coweta HS), **Alan Hubbard** (Walton HS), **Mike Lanham** (Sprayberry HS), and **Cynthia Wolfe** (McNair HS). Each teacher received \$600 for purchasing supplies, tools, and other materials needed for building their modules. The teachers also participated in weekly seminars and field trips to area companies. The field trip to Southwire Industries was particularly impressive, thanks to our host **David Lindsay** (ASM member and MSE alum), who showed them the newly installed bismuth-based ceramic superconductor cable line providing the overall power to the plant in Carrolton. We hope that in addition to the personal benefit that each teacher derived from the summer research experience, they will be able to spread the word about materials science and engineering and interest their students in this enabling discipline. We have also recently received NSF funding which will allow one or two teacher participants to travel to an international research experience site at universities in Japan, Korea, and Hong-Kong, and participate in research with our overseas collaborators. They will also interact with teachers at area high schools and learn about the culture and the system of baccalaureate education in those East Asian countries.

The first ever Materials Camp for Teachers was sponsored by ASM International and held at the University of Michigan, Ann Arbor, during the week of June 23 - 28. The teachers’ camp follows the success of the Materials Camps for students held in the preceding two years at Metals Park. Out of the 30 teachers participating in this camp, Georgia had four teachers, which made it the largest contingent amongst non-

Michigan state teachers, selected to participate in this program. The Georgia teachers were **Garry Loveless** (Central Gwinnett HS), **Christopher Neil** (Lassiter HS), **Michael O'Brien** (Kennesaw Mountain HS), and **Sandra Peterson** (Parkview HS). The ASM-Atlanta Chapter congratulates the teachers and hopes that they will be able to attend one of the chapter meetings to share their experience with the membership. Georgia was also represented at the Materials Camp for students. **Linh Le** from Wheeler HS attended the Materials Camp (West) held at the University of Washington, Seattle.

More information about the Materials Camp for teachers and high school students can be found in the final report which is available on the ASM web site at:

[http://www.asminternational.org/Content/NavigationMenu/ASMFoundation/Materials\\_Camp/Materials\\_Camp.htm](http://www.asminternational.org/Content/NavigationMenu/ASMFoundation/Materials_Camp/Materials_Camp.htm)

The Materials Camp has been one of the most successful and highly praised outreach activities organized and hosted by ASM. The Atlanta Chapter hopes that more Georgia teachers and students will take advantage of these camps and encourages its members to help in identifying potential candidates who may be interested in participating in the 2003 Materials Camps.

### **Professor Miroslav Marek Retires**

**Professor Miroslav Marek** is retiring from the Georgia Tech faculty after having first arrived here in 1966. He is a past Chair of the Atlanta Chapter of ASM and a Life Member of ASM International. He indicated that he now plans to enjoy a lot of gardening & traveling with his wife.

Dr. Miroslav I. Marek has a particularly interesting background. He was born and raised in Prague, Czechoslovakia, now the Czech Republic. In 1952 he was admitted to the Czech Technical University to study Mechanical Engineering. While attending the University he participated nationally and internationally in

target shooting competitions and in 1957 he won the national championship in the combined small-bore & target-rifle discipline. After graduating in 1957 with an Ing. (M.S.) degree in ME/Metallurgy he joined the Faculty of Applied and Nuclear Physics in Prague where he taught Physical Metallurgy and specialized in materials for nuclear reactors as Instructor and later Assistant Professor. He married Anna Ledeska in 1958.

In 1966, Mr. Marek arrived with his wife in the United States to pursue the Ph.D. degree at Georgia Tech in the School of Chemical Engineering/Metallurgy Program. For his dissertation he studied stress corrosion of austenitic stainless steels under the advisement of Prof. Robert F. Hochman. In 1968, after the invasion of Czechoslovakia by the Soviet Union, Mr. Marek and his wife requested and received the refugee status. After graduating with the Ph.D. degree in 1970 Dr. Marek continued working on corrosion and stress corrosion cracking with special emphasis on dental and medical materials, first as a postdoctoral trainee and then Senior Research Engineer at the Georgia Tech Engineering Experiment Station. He joined the faculty of the school of Chemical Engineering/Metallurgy Program in 1976 as Associate Professor. In the same year he and his wife became naturalized citizens of the United States. Dr. Marek was promoted to the rank of Professor in 1986 and served as Associate Director of the School of Materials Engineering from 1988 to 1992.

During his service at Georgia Tech Dr. Marek has been involved in numerous research projects in the area of aqueous electrochemical corrosion, with the main emphasis on dental materials and medical implants. He received his first NIH grant in 1973 and has maintained continuous NIH support to date in the area of dental materials. Several industrial sponsors have supported his research in corrosion of cardiovascular implants. He still maintains active collaboration with the researchers at the Baylor College of Dentistry, Oregon Health Sciences University, Matsumoto Dental College

in Japan, Mahidol University and King Mongkut's Institute of Technology North Bangkok in Thailand, and Institute of Chemical Technology in Czech Republic. He has served as consultant to numerous companies in the areas of biomedical and industrial corrosion.

Dr. Marek is a Fellow of the Academy of Dental Materials, a member of ASM International, NACE International and IADR, and is a past Chairman of the Atlanta Chapter of the ASM. He is certified as a Corrosion Specialist by NACE International, and remains an active member of ISO TC 106 and ASTM F 04. He is a member of the Editorial Board for Dental Materials, and serves as a reviewer for several biomedical and corrosion journals. He and his wife enjoy traveling, gardening, books and music.

## **Transitions**

ASM Member **David Morrison** has recently joined Schwarzkopf Technologies. He is now the Regional Sales Manager for the South East Territory, based in Atlanta. Schwarzkopf Technologies is an Austrian owned company, [www.stcmetals.com](http://www.stcmetals.com).

# Metallurgy for the Non-Metallurgist

Starts September 19, 2002

For the last several months the Atlanta Chapter of ASM International has been planning a course on Metals (materials) to fill industry basic educational needs for metals (materials) knowledge in design, purchasing, manufacturing and quality.

The Atlanta Chapter of ASM International has agreed to offer "**Metallurgy for the Non-Metallurgist**" a basic metals course. The course will be conducted for 7 consecutive Thursday evenings, from 6:30pm - 8:30pm, at GA Tech, Love Building, Room 299, starting September 19, 2002 with the last Class on Oct 31, 2002. Travel is usually required to attend the course offered at \$1,500 by ASM International. The Atlanta Chapter of ASM is offering the course to acquaint interested students with ASM International, the society for materials information and to promote the Atlanta Chapter.

The course will be taught by more than 7 local Industry experts, most PhD level, and many professors at GA Tech. All instructors have volunteered their time to offer the course at **\$495.00 (or \$395.00 for ASM members)**. A year's ASM Membership will be given to all nonmembers who attend by the chapter.

The course is technical, but designed to address basic metals concepts useful to anyone designing, purchasing, inspecting or fabricating metal products, including various types of engineers. Metallurgy for the Non-Metallurgist has been recommended for college credit\* by ACE, the American Council on Education, for 2 college credits. Metallurgy for the Non-Metallurgist also qualifies for 3.2 CEU Credits. Your company may qualify for GA tax credit for your attendance. (~40%)

This is an unbelievable opportunity. I hope you will plan to take advantage of it. Please contact me immediately if either you, or someone that you know, may be interested in attending.

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## Metallurgy for the Non-Metallurgist

Each Thursday Evening

6:30pm - 8:30pm,

GA Tech, Love Building, Room 299

Starts September 19, 2002

Last Class October 31, 2002

Cost: 495.00 for nonmembers and \$395.00 for ASM members

A year's ASM Membership will be given by the chapter to all nonmembers who attend

## **WHO SHOULD ENROLL**

This is an ideal first course for anyone who needs a working understanding of metals and their applications. It has been designed for those with no previous training in metallurgy, such as technical, laboratory, and sales personnel; engineers from other disciplines; management and administrative staff; and non-technical support staff such as purchasing and quality representatives who order and inspect incoming material.

### **Basic Overall Content-**

How metals are recovered from nature and processed into usable forms

The characteristics of different metal alloy systems

A basic understanding of phase diagrams

Factors that affect selection of the proper material

Mechanical properties and various testing methods

How the properties of metals can be altered through heat treatment

Introduction to mechanisms of corrosion and comparative corrosive potential

## **GENERAL COURSE OVERVIEW:**

ASM Materials Education Institute (MEI) **Metallurgy for the Non Metallurgist**

The course will be presented by several members of the Atlanta Chapter of ASM International, and be co-instructed with local industry experts. The course will utilize the MEI course materials developed by ASM International, and each student will be provided a notebook including all course materials, and self-tests. A final exam will be administered for those seeking credits.

**Accreditation:** Metallurgy for the Non-Metallurgist has been recommended for college credit\* by ACE, the American Council on Education, for 2 college credits. Metallurgy for the Non-Metallurgist also qualifies for 3.2 CEU Credits.

### **Course Goals:**

Present a brief history of metals, providing insight into the discovery and use of pure metals and alloys thousands of years before the modern era

Provide an explanation of the unique physical characteristics of metals, including the reasons that metals behave differently than such non-metals as plastics, glass, wood, etc.

Explain the basis for the selection of different metals for specific engineering applications.

Describe how metals are alloyed to achieve desired properties.

Provide details on one of the most important of all alloys -- steel - and discuss how steel is heat-treated to achieve various combinations of strength and ductility.

Explain how metals are formed into the components that are used in our most important engineered machines and structures.

Describe how metals are tested to determine critical properties, such as strength, ductility and toughness.

Discuss why metals corrode, why different metals behave differently in corrosive environments, and how the corrosion of metals can be controlled.

## Atlanta Chapter Sustaining Memberships

Sustaining Member for the Atlanta Chapter of ASM International include **Metals & Materials Engineers, (MME)** and **Chromalloy Georgia**. These Sustaining Member companies are significant to the work of ASM.

Contact the Membership Committee Chair: **Dr. Jud Ready**, MicroCoating Technologies, 5315 Peachtree Industrial Blvd., Atlanta, GA, 30341, 678-287-3969; [jready@microcoating.com](mailto: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. Please read again the Materials Educational activities described in this issue, along with the referenced web site, to get a perspective of some of the aims for your chapter. Your company's participation can have an extraordinary effect.

### Membership Committee

**Jud Ready**, Membership Committee Chairman for ASM-Atlanta, continues the process of reconciling the ASM-Atlanta membership database. Jud asks: Please help him by verifying that your information is complete and accurate. To verify and update your membership information, go to: <http://www.asm-intl.org/> & select "Site Login" then select "Update Your Membership Record"

**Jud Ready**, PhD, Government Grants Manager, MicroCoating Technologies, Inc., [jready@microcoating.com](mailto:jready@microcoating.com)  
<http://www.readymadeparties.com/jud>

### Chapter Members Serving ASM International

Members of the Atlanta Chapter have served on committees, chaired conferences, contributed to ASM Handbooks and many other functions for ASM International through the years. During recent months, the Managing Director of ASM International asked Atlanta Chapter member Jud Ready to serve on the Membership Committee and Atlanta Chapter member Bill Livesay to serve on the Chapter Council. Both organizations have formal meetings at the ASM Annual Event being held October 7 - 10 in Columbus, Ohio.

### A Message for ASM Members Who May Be Without Jobs at the Moment

The current economic times are hard on many people, but we have discovered that ASM International, indeed, does look after it's own members. We are very pleased - and proud - to inform the ASM membership about a wonderful benefit available to ASM members who are unable to

renew their membership due to change in work status. One of our members reported receiving a telephone call from Phil McNaughton, Sr. Service Representative @ASM International, who said his 2002 membership dues would be taken care of due to his unemployment situation. What a super benefit! If you know of ASM members in the Atlanta chapter who are currently experiencing a job situation and wish to continue their membership, please encourage them to inquire about this unique benefit.

### Features of ASM-Atlanta

- 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.)

**Special Note:** If you do not also receive this newsletter via your email, it means we don't have your email address. Please address an email message to [livesay3@bellsouth.net](mailto:livesay3@bellsouth.net) and simply type **ASM Newsletter** in both subject and body.

Over the last couple of years, this space in *ASM-Atlanta* has said, "We eventually wish to migrate to much greater email distribution of the newsletter to help control costs". Well, "eventually" has come. So, let's all try to make the transition as smooth as possible.

If you wish to continue to receive hard copies of *ASM-Atlanta* through US Mail, you must now submit the request stated on the first page of this Newsletter. Don't delay, as this is the last mailing to the whole membership. You can simply write:

"Please continue to send me future issues of the Newsletter *ASM-Atlanta* via US Mail"

**Name:**  
**Address:**  
**Email address:**

**Send to:**

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