



ASM - Atlanta

Newsletter of the Atlanta Chapter of ASM International
<http://www.asm-atlanta.org/> Normally Meets 3rd Tuesday
September, 2004 Volume 11 Number 1

Meeting this next Tuesday!

September Meeting of the Atlanta Chapter of ASM

Tuesday Evening, September 14, 2004
In the Georgia Tech School of Materials Science & Engineering
Located in the Love Building - 3rd Floor Atrium

Stress Corrosion Cracking of Pipeline Steels

presented by

Preet M. Singh

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

also

Electrochemical Double Layer Supercapacitors Based on Carbon Nanotubes

presented by

Stephan P. Turano

A 10-minute Master's graduate student presentation
School of Materials Science & Engineering, Georgia Institute of Technology

Tuesday Evening, Sept. 14, 2003

Wine Reception & Social: 6:00 PM
Dinner: 6:30 PM
Introductions & Business: 7:15 PM
Mr. Turano's Presentation: 7:30 PM
Dr. Singh'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: South of the Border Buffet: Corn & Black Bean Salad on a bed of greens, Tortilla chips with black bean dip, prepared chicken fajitas with sautéed onion & mixed peppers, fajita toppings tray, soft flour tortillas, cilantro fried rice, Mexican corn, iced tea & water.

Reservations: RSVP - by noon on Monday, Sept. 13, 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.

About the Presentation by Dr. Singh:
Stress Corrosion Cracking of Pipeline Steels: Thousands of miles of pipeline, made out of carbon steel, carry compressed natural gas from the gas-fields to distribution centers or to consumers. Most of these pipelines are buried in the ground and often pass through populated areas. Stress corrosion cracking (SCC) of buried pipelines was found to be responsible for a number of fatal explosions in past ~30 years. These failures have been reported worldwide. Mechanism of initial failures was found to be intergranular stress corrosion cracking (IGSCC)

in high pH carbonate/bicarbonate environments. However, in recent years, we have seen a number of transgranular stress corrosion cracking (TGSCC) failures, especially in Canada and northern states. TGSCC failures were associated with near-neutral pH environments, detected near such failures. Crack morphology of failed pipelines and laboratory simulations suggest that hydrogen embrittlement is part of TGSCC mechanism. The talk will summarize our work on IGSCC and TGSCC and describe how the two environments may be related.

This talk will start by briefly discussing the main points of a recent federal report "Corrosion costs and preventative strategies in the United States"

Biography: Dr. Singh joined MSE as an Associate Professor in July 2003. Prior to joining Prof. Singh was a faculty member at The Institute of Paper Science and Technology (IPST) and group leader of Corrosion and Materials Engineering Group since 1996. While at IPST, Dr. Singh worked on fundamental as well as applied research projects related to corrosion problems in the pulp and paper industry. He received his Ph.D. from the University of Newcastle Upon Tyne, UK in 1989. His Ph.D. research was focused on understanding the role of crack interaction and coalescence on overall stress corrosion cracking behavior. After finishing his Ph.D., he received the Alcan International Fellowship in 1988-90 to work on "Effects of Low Melting Point Impurities on Slow Crack Growth in Al Alloys". From 1990 to 1996, he was a Senior Research Associate at Case Western Reserve University, Cleveland, Ohio, working on mechanical behavior of materials and corrosion related research projects, including damage accumulation in metal matrix composites (MMCs), Environmental sensitive fracture of Al-alloys MMCs, and high temperature oxidation of Nb/Nb₅Si₃ composites His current research areas include Corrosion Fatigue and Stress Corrosion Cracking, General corrosion (Especially in the process streams of pulp and paper industry), High temperature corrosion of metallic and ceramic materials in industrial boilers and bio-fuel gasifiers.

About the presentation by Mr. Turano: Electrochemical Double Layer Supercapacitors Based on Carbon

Nanotubes: In addition to having superior mechanical & electrical properties, carbon nanotubes also have outstanding electrochemical properties making them ideal for electrochemical double layer supercapacitors. In this work, electrochemical supercapacitors are produced with purified carbon nanotubes incorporated into an active material paste. Results show a significant increase in capacitance over standard electrolytic capacitors, but somewhat lower capacity compared to commercially available supercapacitors with different electrode materials. Additional research has been focused on controlled carbon nanotube synthesis in order to create more reliable electrodes

Biography: Mr. **Stephan P. Turano** graduated with a bachelor's degree in Materials Science and Engineering from Georgia Tech in 2002. He is currently pursuing a Master of Science Degree in Materials Engineering at Georgia Tech. His research interests include the development of nanomaterials for electronic integration and applications, specifically carbon nanotubes. Mr. Turano is currently working on applying carbon nanotubes as an active material in Electrochemical Double Layer Supercapacitors. In addition, Mr. Turano is currently analyzing chemical vapor deposition synthesis and the effects of catalyst and electric field on nanotube production and properties.

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Nanotechnology Laboratory
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Message From the Chapter Chairman -

GEORGE KREMER

Dear ASM Atlanta Chapter Members:

The Atlanta Chapter welcomes you to a new series of exciting programs designed for the 2004 – 2005 chapter year. The success of our chapter is possible because of the continued support of our members, the dedication of Georgia Tech students, and the planning of our executive committee. This year, our executive committee has changed to accommodate our new programs. The changes are as follows:

- Dr. Preet Singh (Georgia Institute of Technology) has accepted the position of Short Course Director.
- Mr. James Lane (Applied Technical Services) has joined our executive committee as Vice-Chair Industrial Relations.
- Dr. Harry H. Tian (GIW Industries) was elected to the position of Chapter Secretary.
- Mr. David Morrison (Schwarzkopf Technologies Corporation) has taken on the position of Membership Chair, and
- Mr. Mark Oliver (Georgia Tech student) has been elected to the position of Student Chapter President.

(For a complete list of our Executive Committee Officers for the 2004 – 2005 Chapter year, please go to our website: www.asm-atlanta.org)

As the new Chapter Chairman for the 2004-2005 chapter year, I am privileged to have new talent leading these committees. I am also excited about the presentation of our ASM Short Course, titled “**Metallurgy for the Non-Metallurgist**” beginning in October 2004 on the campus of Georgia Tech.

We also want each of you to pass the word around concerning candidates for Materials Camp. This is a fantastic opportunity for talented high school students to travel to ASM sites to receive special instruction on materials and experience the use sophisticated analytical equipment. The applications are normally due to ASM HQ about January, but now is the time to begin to get the word out to these young people. Perhaps one of your own children will qualify? Those who have gone from Atlanta in the past

report that Materials Camp is a terrific experience.

In conclusion, we hope that you are looking forward to a new year filled with informative lectures, great plant tours, and a valuable exchange of ideas among our members and associates.

George Kremer, Chairman
ASM-Atlanta, 2004-2005 Chapter Year

The Atlanta Chapter of ASM International is Pleased to Announce

The ASM Materials Education Institute (MEI) Short Course:

Metallurgy for the Non Metallurgist

Dates: 7 Thursday evenings from 6:30-8:30pm, starting October 7, 2004 to / including December 2, 2004. (Excluding Thanksgiving)

Location:

**Georgia Institute of Technology
J. Erskine Love, Jr. Manufacturing
Building, Room 299, 771 Ferst Drive,
Atlanta, Georgia**

**CONTACT & REGISTER by: Oct. 4,
2004 :**

**Marlene White, Tel: (404) 894-2850,
Marlene.white@mse.gatech.edu
or Preet M. Singh, Tel: (404) 894 664,
Preet.Singh@mse.gatech.edu**

**Membership Committee
David Morrison, Chairman**

Greetings from the membership committee! I'm looking forward to meeting our newest members at the upcoming meetings. Our chapter president has put together an exciting year of meeting opportunities. Please resolve to attend at least one event this year. I encourage both new and "older" members to join in our meetings and have fun networking with fellow ASM Atlanta professionals. Specific goals for year 2004/05 include welcoming new members, recognizing members who achieve milestone service awards, and improving communications regarding our newest members or those receiving awards. Please feel free to contact me via email, office, or cell phone with questions or ideas on recruitment of new members.

Best regards,

David Morrison, Schwarzkopf Technologies Corp. Email: davidmorrison@stcmetals.com
Phone: 770-517-00782, Cell: 508-878-3758

Atlanta Chapter Sustaining Memberships

Metals & Materials Engineers is a Sustaining Member for the Atlanta Chapter of ASM International Sustaining Member companies are significant to the work of ASM. Contact the Membership Committee Chair, **David Morrison**, for enrolling your company. Your organization's commitment to this program will provide a valuable contribution to the education and development of young materials scientists and engineers.

Future Meetings

For **October** we will have a joint meeting with another professional society, **AIAA** and in **November** will have an outstanding plant tour. You will receive details on these events through future email communications and on the Atlanta ASM web site.

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.)

Send information, articles or suggestions to:

Bill Livesay, Editor *ASM-Atlanta*.

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or