



# ASM - Atlanta

Newsletter of the Atlanta Chapter of ASM International

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## January Meeting of the Atlanta Chapter of ASM

Tuesday Evening, January 15, 2002  
At the Georgia Tech Ferst Place Cafeteria,

### PROGRAM

#### Friction: It's a Matter of Life or Death

presented by **Dr. Peter J. Blau**  
Metals and Ceramics Division  
Oak Ridge National Laboratory  
Oak Ridge, Tennessee

also

#### Processing and Properties of High Conductivity Extruded Honeycomb

A 10-minute Ph.D. student presentation by **Ben Church**  
School of Materials Science and Engineering  
Georgia Institute of Technology

**ASM Chapter Meeting**  
Tuesday Evening, Jan. 15, 2002

**Costs:** \$20.00 Regular, \$6.00 Students

**Wine Reception & Social:** 6:00 PM  
**Dinner:** 7:00 PM  
**Introductions & Business:** 7:50 PM  
**Mr. Church's Presentation:** 8:00 PM  
**Dr. Blau's Presentation:** 8:15 PM

**MENU:** A dinner menu of Georgian Pecan Crusted Chicken, Caesar Salad, Roll and Butter, Coffee (regular and Decaf), Iced Tea, Pecan Pie dessert, Vegetarian dinner available upon request. Wine - extra charge

**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 noon on Monday, Jan. 14, 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:**

**Friction: It's a Matter of Life or Death, by Peter J. Blau**

Mechanical ('solid') friction is the resistance to tangential, relative motion between two or more contacting bodies. The implications of this long-studied, yet incompletely understood phenomenon are far-reaching. Friction is both enabling and disabling. It enables us to hold and move objects, to build archways, and to walk across the room, yet in other forms, it reduces the efficiency of engines and other machinery, increasing consumption of oil and other fuels. In seeking to control friction, engineers have used a combination of experience, mechanical design, testing, lubrication, and materials selection. Since the causes of friction vary from one tribosystem to another, friction technology encompasses a class of problems rather than a single, unified field of study. Friction theories based only on contact mechanics or materials properties inadequately predict the wide range of sliding behavior observed in machines. The speaker will summarize multi-disciplinary approaches to understanding sliding friction, exemplify friction control in personal safety devices, and describe the Department of Energy's interest in fuel efficiency and braking systems of cars and trucks.

***About the speaker...***

Peter J. Blau is a native of Reading, Pennsylvania. He earned B.S. and M.S. degrees in metallurgy and materials science from Lehigh University and a Ph.D. in metallurgical engineering from The Ohio State University. His career in materials research and development has ranged from lunar soil to aircraft manufacturing technology to friction, lubrication, and wear (tribology). He has worked at the U.S. Air Force Materials Laboratory, the National Bureau of Standards (now NIST), the Office of Naval Research, and Oak Ridge National Laboratory. An active member of ASM, he was past Chairman of the Washington, DC Chapter, past Chairman of the ASM Specialty Materials Division, and

chairman of the ASM Handbook volume on 'Friction, Lubrication, and Wear Technology.' He is a Fellow of both ASM and ASTM, and currently serves as Chairman of ASTM Committee G-2 on Wear and Erosion. His current research, mainly supported by the U.S. Department of Energy, focuses on developing new materials to enhance the fuel-efficiency and safety of heavy trucks.

***Acknowledgement***

A portion of this research was supported by the U.S. Department of Energy, Office of Transportation Technologies, under contract DE-AC05-00OR22725 to UT-Battelle LLC, Oak Ridge, Tennessee.

**Abstract:**

**Processing and Properties of High Conductivity Extruded Honeycomb, by Ben Church**

Extrusion of oxide powders allows for the fabrication of thin-walled metal articles to produce controlled geometry, low-density copper alloy architectures. Shapes formed with copper oxide powders mixed with alloying oxides are reduced and sintered to produce high relative densities in the thin walls. This technology has produced honeycomb extrusions of various geometries, which are being characterized for heat exchange and other applications. This presentation will discuss the bulk properties of alloys produced by this type of thermo-chemical powder processing and explain behavior based on the final chemistry and microstructure of the alloys. Compositions investigated include Cu, Cu-Ni, and Cu-Ag alloys. Properties such as tensile/yield strength, elongation, thermal conductivity, and microstructure will be compared to materials made by conventional and P/M processing.

**ASM Materials Camp**

**ASM Materials Camp** is a 5-day, lab-based learning experience for 30 students entering their junior or senior year of high school, interested in

exploring a possible career in materials science or engineering.

The ASM International Materials Camp has been a very successful program. **The Atlanta Chapter has been able to place a high school student from the Atlanta Area in the ASM International camp during each of its first two years of operation.** We would like to do this again in 2002. However, we need the help of the ASM membership to make this opportunity known as widely as possible so that qualified youth high school students can become aware of this fine opportunity. Do you know a bright young person who might qualify and be interested? Perhaps your own child, a neighbor, a school mate of your child, etc.

**Time is short for the application process** since the deadline for final submission to ASM International is **March 15, 2002**. Send your suggestions to the Atlanta Chapter Chairman, **Kim B. Spinsby**, 770-740-3185V; 770-740-3050F, kim.spinsby@sea.siemens.com. The chapter will need suggestions by mid February in order to have time to interview candidates, etc.

This weeklong academic camp features highly interactive, lab-based activity tailored to individual student interest areas. Evening social activities include a materials "sub-theme" (i.e.; tours of local attractions and industry tours, etc.). Students "graduate" during a special event with chapter, ASM, and Foundation leaders, where they have the opportunity to meet and network, and explore career options.

Materials Camp begins with a welcome reception and dinner, where students, faculty and staff get acquainted. Second day opens with an introduction to materials of today and tomorrow, along with a basic overview of materials failures and why/how they occur. The students are then organized into small groups and teamed with a Volunteer Faculty "Materials Mentor" who works with them throughout the week. A variety of experiments and lab activities such as metallography, mechanical testing, light microscopy, fractography, scanning electron

microscopy, image analysis, and chemical analysis are used.

The camp concludes with the teams presenting a summary of their findings, including recommended corrective action to members of the ASM Foundation Board, ASM International Board, the entire Materials Mentor Faculty, and their student peers. The program ends with graduation and a dinner.

#### **Target Audience**

- \* High school students. There are no geographic restrictions.
- \* Highly motivated inquisitive learners with math and science aptitude.

**ASM Materials Camp cost the student absolutely nothing.** Students receive free travel, housing, meals, tuition, entertainment and knowledge.

#### **Selection Of Finalists**

- \* This is a competitive application process. Students must have basic knowledge of algebra, chemistry, and physics and describe why they want to learn more about engineering and materials science as a possible college major and career.
- \* Experienced practicing engineers review each application to select the "best and brightest", highly motivated students who have not yet made a firm decision about a college major or career.
- \* Students must have a strong interest in applied science.

Please call Kim Spinsby at 770-740-3185V, or email at, kim.spinsby@sea.siemens.com with your suggestions or comments.

### **ASM Service Awards**

ASM International has sent to the Chapter Secretary, **Gautam R. Patel**, service award pins for presentation to the following members of the Atlanta Chapter. These will be presented at the January meeting of the Atlanta Chapter of ASM.

**5 Year Membership:** Dave M Paul, Wayne Engeron, Kevin L. Cook, Robert Speyer, David McDowell, Kim Spinsby, Andrew Mandel, Mohsen Mehrabi, Ann Campbell, Curt Jarrell, Steven Kushnick, Wade Shadinger & Paul W. Risbin

**15 Year Membership:** David P. Morrison, William E. Rose, Michael Bowers, Gerald L. Jones & Jerald A. Smith

**25 Year Membership:** Jerry Ezzell

**Life Members:** Miroslav Marek & Bill Livesay

## 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](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.

## 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".

## 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](mailto: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](mailto: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](mailto:gwkremer@bellsouth.net)

**Vice-Chair, Programming: Subu Shanmugham**, MicroCoating Technologies, 5315 Peachtree Industrial Blvd, Chamblee, GA, 30041, 678-287-2417; [subu@microcoating.com](mailto: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](mailto: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](mailto: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](mailto:ashok.saxena@mse.gatech.edu) <http://www.mse.gatech.edu/faculty/saxena/sax.html>

**Membership Committee Chair: Jud Ready**

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**GT ASM Student Chapter President: Shelby Highsmith**

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**Previous Chairs Advisory Group:**

**Naresh Thadhani, Ed. Com. Chair**

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**Jim Hubbard, Atl. ASM Yearbook/Directory Chair: Materials**

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