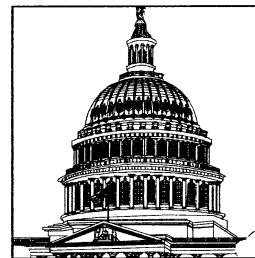


Material Matters



ASM International
Washington, D.C. Chapter
www.asm-dc.org

ASM Newsletter & Meeting Notice.....December 2000

Material Misconceptions

Dr. Merrilea J. Mayo
Professor of Materials Science and Engineering
Pennsylvania State University

SPOUSE'S NIGHT

DATE: TUESDAY, DECEMBER 12, 2000

TIME: Please bring and introduce your spouse or significant other at our holiday meeting
6:00 PM-Social
6:30 PM-Dinner
7:30 PM-Presentation

PLACE: Alfio's La Trattoria
4515 Willard Avenue
Chevy Chase, Maryland

PHONE: (301) 657-9133

(because the chemistry model has green and red balls)" are common even for those who have taken a science class. In science fiction and Hollywood, the effects of mangled science education are sometimes hilarious: "Captain, he's only microns away!" The talk concludes with examples from the audience about materials misconceptions.

Biographies:

Merrilea Mayo is currently on leave from her position as an Associate Professor of Materials Science and Engineering at the Pennsylvania State University. She received her B.S. degree from Brown University in 1982, and her M.S. and Ph.D. degrees from Stanford in 1984 and 1988, respectively. Following two years as a member of technical staff at Sandia National Laboratories, she moved to Penn State in 1990. At Penn State, Dr. Mayo maintains an internationally recognized research group in the area of nanocrystalline ceramics, and teaches graduate and undergraduate courses. She also participates extensively in the governance of the Materials Research Society, where she currently serves as both Treasurer and member of the Executive Committee.

Dr. Mayo has a strong interest in public policy. She has worked for many years on the Government Affairs Committee within the Materials Research Society. Recently, she took a one-year fellowship on the Hill where she worked in the office of Senator Joe Lieberman; she covered both civilian and military R&D related issues. Dr. Mayo is now spending a four-month period, from September to December 2000, helping to develop a strategy and business plan

Abstract: It is always interesting to see yourself as others see you. The public view of the world of materials is sometimes an eye-opener. People tend to intuitively understand various categories of materials: metals are shiny, ceramics are delicate and easily break, and polymers become 'gooey' when heated. The public often can amazingly imagine a material property even before it is invented; many times the invention then follows public imagination such as x-ray vision devices, bullet-stopping vestments, or artificial "nanites" in the bloodstream.

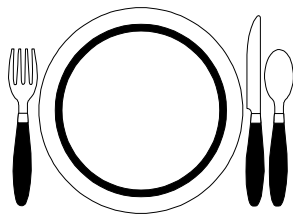
Public understanding of materials ceases when the explanation reaches the microscopic world--our world. Scientist only perpetuate confusion with a specialized vocabulary and arcane models. Statements like "the smallest unit of matter is dirt," "sodium atoms are green and chlorine atoms are red

for a new non-profit organization whose mission is to secure long-term increases for federal R&D funding within the mathematics, physical science, and engineering fields.

Directions to Alfio's: From I-495, take Wisconsin Ave. (Route 355) south to Willard Ave., make a right turn onto Willard Avenue. **N.B.:** Alfio's is on the ground floor of a large apartment building on the right and it has only a small sign out front. They have free valet parking or you may park on the street. **Alternate Directions:** Take I-495 North, exit River Road, take River Road East to Willard Ave., make a left turn onto Willard Ave. Alfio's will be on the left. **By Metro:** Alfio's is located 1 ½ blocks north from the Friendship Heights Metro.

Meal Choices: You may select from one of the following items. All meals are \$20 (Student member rate is \$10).

Veal Parmisan
Chicken Francese
Filet of Flounder (Broiled)
Eggplant Parmesan (Vegetarian)



Please have reservations to Sherri Davis at Artech Testing LLC at 703-378-7263 by COB, Friday, December 8th. No-shows cost the Chapter money. You will be billed if you make a reservation and don't attend.

Local Material Folks In the News

Marta E. Vornbrock, Student Member from the University of Maryland was awarded the George A. Roberts Scholarship from ASM International. She became interested in materials during high school internships working in metallurgy with the Navy and at General Electric Lighting. Vornbrock is very involved with her ASM/TMS student chapter, where she was president during her sophomore year. She has also served as vice-president of the Society of Hispanic Professional Engineers.

Charles P. Sturrock, member from NIST published "MatML: XML for Materials Property Data," in the November 2000 issue of Advanced Materials & Processes. MatML is an extensible markup language for the exchange of materials property data on the Internet. Visit the MatML website at <http://www.ceramics.nist.gov/matml/matml.htm>

Chapter Minutes

The Washington, DC Chapter of ASM was honored to have Dr. Ravi Ravindran, FASM as the speaker for our first dinner meeting held on October 19, 2000. The presentation was initiated with a few comments regarding the current and future directions of ASM, International. There is a substantial initiative to make ASM much more web-centric, providing additional

services to the members through ASM's website. There is a significant effort in the expansion and globalization of the Society. To encourage this growth, the extra membership fees that have been required for international members have been eliminated. In addition, ASM continues its educational effort to encourage our young members to consider a career in materials science through outreach programs and the new Student Camps that are held for high school students at ASM, using substantial amounts of donated new equipment for materials preparation and analysis.

Dr. Ravindran technical talk focused on the use of Lost Foam Casting for Near Net Shape Processing of materials. This technique enables complex shapes, including internal cavities, to be manufactured with good surface conditions at significantly reduced costs. The steps of the process include component design, tool making, producing foam sections, assembly of the foam, and coating of the foam, all which occur before the introduction of the material to be cast. During the pour process, the temperature of the molten material must be kept low to keep the gas volume low, but there must still be methods for the trapped gases to escape as necessary. When high temperatures are used, the permeability of the coating material used in the casting may vary.

This relatively new technology is still under development, but holds high promise to enable complex shapes to be cast directly with minimal amounts of additional machining. Future developments in the field include the decreasing the residue from the foams, the development of alternative foams that have improved compaction behavior and enable enhanced filling of the mold. These types of developments will improve the quality of the castings, leading to the widespread deployment of this technique as the casting method of choice. We wish to thank Dr. Ravindran for his insightful discussion of this topic and overview of the developments that are occurring at ASM, International.

The November meeting of the DC Chapter of ASM was the first of a two-part discussion of entrepreneurial opportunities in the field of Materials Science. Our speakers were Sally Rood of the Federal Laboratory Consortium and Stephen L. Peterson, a Partner in the law firm of Finnegan, Henderson, Farabow, Garrett, and Dunner, which specializes in Intellectual Property Law. These speakers provided insight to the opportunities and considerations that new materials entrepreneurs must consider as they bring a new discovery from the laboratory to the marketplace.

Sally Rood introduced the Federal Laboratory Consortium (FLC) as a virtual network that seeks to transfer knowledge from Federal Labs and to use the resources of the Labs to assist the development and

commercialization of new processes and technologies. Over 15 federal agencies participate in this program, which includes the Federal Laboratory Locator service that will find the federal resource, technology, or service to meet your need. This is available as a free resource to the public. In addition, there is a new program called the Partnership that provides some pre-commercialization funds for technology assessment, market analysis and business plan preparation. This is a pilot program with a focus on dual use and environmental applications. Details of this program and the services of the Federal Laboratory Consortium can be found at the website www.federallabs.org. There are six regional divisions of the FLC, including a mid-Atlantic Region. The local region actively supports such functions as the Maryland Technology Showcase that is being held in Baltimore on December 6 and 7.

Steve Peterson introduced the legal considerations of starting a technology-based company, including such items as trade secrets, patent law, export control, and warranty obligations. The prosecution and defense of patents has become a very active field as companies realize the value of intellectual property in the highly competitive business world. Patents can function as the first line of defense as a business is developed, securing a position in a technical field. The patent process is initiated by a preliminary search to insure that there are no previous patents that conflict with your development. Once completed, the authoring of a patent could be a two to three month process, followed by its submission to the US Patent and Trademark Office. Once submitted, the patent is reviewed and can take up to 3 years to validate the claims of the patent. Once awarded, the patent is your property that can be used to secure your position in a marketplace, or can be sold or licensed to generate revenue. Additional topics that were discussed included trade secrets, non-compete agreements, and your assumption of the warranty that something that is being sold does not infringe on existing patents.

Overall, these two talks provided significant insight to the entrepreneur who is considering forming a small business. The DC Chapter of ASM would like to thank Dr. Rood and Mr. Peterson for contributing their knowledge of resources available to new start-up businesses. If you are considering such a step and did not attend, make sure to contact someone who was there to gain the knowledge that was shared at this very interesting meeting.

Member Opportunities

Qualified lecturers are being sought to serve as ASM-Indian Institute of Metals 2001 Visiting Lecturers. Qualified lecturers must be ASM members who can lecture on current technological conditions in India, have definite travel plans to and from India using their



own funds, and will be available between 1 June and 31 December 2001. The deadline for applications is 15 February 2001. Nomination forms are available on the ASM website at www.asminternational.org

The ASM Heat Treating Society is seeking nominations for the 2002 George H. Bardeen Heat Treating Achievement Award. This award recognizes distinguished contributions to the field of heat treating through leadership, management, or engineering development of substantial commercial impact. Nominations are due by 1 February 2001. Nomination forms are available on the ASM website at www.asminternational.org

MORGAN L. WILLIAMS SCHOLARSHIP FUND

The Washington, D.C., Chapter of ASM International invites eligible and interested undergraduate students to apply for this scholarship. Scholarships are awarded yearly to Washington area (those who graduated from a Washington D.C. metropolitan area high school and continue to have a principal residence in the same area) undergraduate students majoring in one of the "Science or Engineering Disciplines Dealing with Metals/Materials." One scholarship for the amount of \$2000 will be awarded for the 2001-2002 academic. The deadline for submission of application is March 31, 2001. For applications and further information, please contact Professor S. Ankem by phone: (301) 405-5219 or e-mail: ankem@eng.umd.edu.



Program Schedule for 2000-2001

- December 12 Spouse's Night: Dr. Merrilea Mayo (Pennsylvania State University and Congressional Fellow), "Material Misconceptions."
- January 9 Forensic Science: Dr. Douglas B. Chisholm, Chisholm Associates
- February 20 Multifunctional Materials: Dr. Leo Christodoulou, DARPA, Defense Sciences Office
- March 13 Burgess Award Meeting: Dr. Robert Hwang (Sandia National Lab, California), "The Strange World of Surface Alloys"
- April 10 Part Two-Small Business Panel, Topic: "Surviving the Valley of Death: SBIRs and Issues in Commercialization of Materials,"
- May 8 Student's Night; Topic: Biomaterials

Chairman's Message



Hopefully, by the time you read this, we will have put the election and discussions of lawsuits, recounts, and appeals well behind us. As the weather gets colder and we move into the holiday season, I invite you to take a break from card writing and shopping and join us for our annual Spouses' Night event at Alfio's. Our speaker, Professor Merrilea Mayo will take through a lighter discussion of public misconceptions of materials and science in general - using examples from the movies and other media. I think everyone will enjoy her presentation.

Although the Chapter continues to do well, we continue to need willing members to step-up and take on leadership positions within the organization. Opportunities exist to fill many interesting and important positions on the Executive Committee. The time commitment is limited and the rewards for participation are great. Please contact any of your Chapter officers (contact information is listed on the newsletter back cover or visit any officers at the Chapter meetings) if you feel like you can contribute some time to the Chapter, or if you would like to nominate someone else for a position.

In October, the Executive Committee had a constructive dialogue with a member of the ASM Board of Trustees. The Chapter was again commended for its excellent programs and energy. We were encouraged to try and expand our programs, especially those that bring us in contact with local students, both at the university and K-12 levels. Once again, this requires the efforts of many Chapter members. If you would like to learn more about of student outreach activities or have suggestions for new programs that the Chapter can participate in, please contact the Executive Committee.

On behalf of the entire Executive Committee, I wish you and your family a safe and joyous holiday season. I look forward to seeing you all at Spouses' Night and at all our future Chapter events.

- A. Seraphin



Please recycle this newsletter

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Newsletter Deadline

All information for the January Newsletter must be turned in by Monday, December 18th. Please contact Alvin Henry at (703) 519-0200 or ahenry@mpr.com with meeting dates, member news, materials related events and news, and networking opportunities.



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