



The Macrogram

Hartford Chapter of the ASM International

Build on our Strengths - Leverage our Diversity - Network to Succeed

MONTHLY MEETING – TOPIC

January 13, 2004

Topic: Metallic Glasses - Half Full or Half Empty

Speaker: Dr. Martin Blackburn

Professor-in-Residence
Institute of Materials Science, UConn

Directions: Cugino's, 1076 Main Street, Newington, CT 06111, Ph: (860) 665-0881

Main Street is Route 176. **Cugino's** is south of Route 175 (Cedar Street). Use alleyway to parking area in rear.

Agenda:

Cocktails: 5:30-6:30 PM

Dinner: 6:30 7:30 PM

Program: 7:30- 8:30 PM

Program Charges:

Regular Members - \$28.00

Retirees - \$15.00

Full Time Students - \$15.00

Technical Chairperson: Dr. Harris Marcus

Social Hour Sponsor: TBA

Reservations: Call Laura or Patti at Dynamic Metals (860) 583-3336 by noon January 9th. **Thanks!**

Abstract:

Metals and alloys are usually comfortably crystalline with a number of associated attractive and valued characteristics. What would happen if the atomic order could be compromised and more random structures formed? Very thin sections of metals can be produced with an amorphous or glassy structure if exceptionally high cooling rates can be achieved, but these are of limited utility. It was a surprise when, in the early sixties, certain alloys were identified that could be solidified in a glassy state by conventional preparation methods, such as casting. This served as the impetus to rapidly expand the search and the discovery of more and more systems that exhibited glass formability; several illustrative examples will be given. Are glassy materials useful? Some show very attractive physical and chemical properties and are currently used for specialized applications. But, although glasses are strong and have some toughness, use as structural elements has been more elusive; it is only recently that Government funded programs have been initiated to explore the potential for engineering applications. The presentation will cover the progress made to date on one such project on Aluminum based alloys. It will describe the criteria used to formulate and design alloys, the processing methods needed to fabricate product and the properties achieved so far. Development is at an interesting stage and the jury is probably still out on the ultimate direction of this new class of materials.

Speaker's Bio

Dr. Blackburn obtained bachelor (1958) and doctorate (1962) degrees from the University of Cambridge in the United Kingdom. Subsequently he embarked upon a long and successful industrial and government career, of over thirty-six years, with the Boeing Company, the United States Air Force and Pratt and Whitney. He recently retired from the position of Deputy Director of the Material and Process Laboratory at P&W and joined the University of Connecticut as a Research Professor.

Early technical contributions included the definition of phase transformations in titanium systems including the elucidation of the ordering reaction in titanium aluminum alloys and the definition of the nature and structure of the omega phase. New and novel test and analytical methods were developed that provided major insight into environmental cracking phenomena in light alloys. He led the initial development of titanium aluminides and invented nearly all of the first generation alloys; the crystallographic orientation between the alpha two and gamma phases is often referred to as the "Blackburn Relationship". At Pratt and Whitney he was responsible for defining material development strategy, including all titanium technology and applications, and formed close associations with the Design and Manufacturing disciplines. As manager he directed the development of over fifty technologies that are used in gas turbine engines, including powder metal disks, structural castings and super critical shafts. Dr. Blackburn is the author of over fifty publications and holds seven patents.

Current technical interests are reflected in recent contractual involvement and activity. He is presently a task leader for the Accelerated Insertion of Materials DARPA program recently awarded to P&W, and also a task manager in the Structural Amorphous Metals program awarded to the Boeing Company. Both these programs couple University led theoretical definition of property relationships to the industrial design and performance requirements for advanced materials and represent an important new trend in the field. Extensive experience in the testing and certification of structural materials is evident in the development of a new and comprehensive fatigue analysis for Titanium alloys based, in part, on the results of a recent AFOSR Contract.

September 15, 2004
Annual Golf Outing Classic
180 West Street-Hebron, CT



February 10, 2004

Trustee Visit and Past Chair Night

Topic: An Overview of Advanced Materials

Speaker: Dr. Reza Abbaschian, FASM



2001-2004 ASM Trustee
Chairman & Vladimir A. Grodsky Professor
Dept of Materials Science & Engineering
University of Florida

Directions: Cugino's, 1076 Main Street,
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Technical Chairperson: Arnie Grot

Social Hour Sponsor: TBA

Reservations: Call Laura or Patti at Dynamic Metals (860)
583-3336 by noon February 6th. **Thanks!**

Abstract:

Everything we use is composed of advanced materials, from computer chips to flexible concrete skyscrapers, from plastic bags to artificial hips, from optical cables to automobiles. Designing and making these materials in an innovative and efficient manner impacts all areas of our present and future needs in transportation, environment, health, housing, energy, defense, food, etc. As such, the impact of advanced materials extends beyond products, in that tens of millions of jobs depends on their availability. In this presentation, a historical overview of the impact of advanced materials on the society will be presented.

Speaker's Bio

Dr. Reza Abbaschian received his Ph.D. in materials science and engineering from the University of California, Berkeley, in 1971, M.S. degree in metallurgical engineering from Michigan Technological University in 1968, and B.Sc. in mining and metallurgy from Tehran University in 1964.

Before joining UF in 1981, he was chairman and member of the faculty at Pahlavi University, Shiraz, Iran, Visiting Associate Professor at the University of Illinois, and Visiting Scientist at Massachusetts Institute of Technology. He has produced more than 200 scientific publications on subjects ranging from metal processing, crystal growth, solidification, and intermetallic matrix composites to phase diagrams. He also has four patents, three patent disclosures, and eight books, including the third edition of Physical Metallurgy Principles, which he co-authored.

Dr. Abbaschian has been active in several regional and national educational and professional organizations, including National Materials Advisory Board, NASA Space Station Users Advisory Committee, TMS Board of Directors, Trustee of Federation of Materials Societies, NSF-Materials Research Advisory Committee, and chairman of the University Materials Council. He has served or chaired numerous panels and committees, such as the ASM Government and Public Affairs Committee, ASM/MSD Thermodynamics and Phase Equilibria Committee, the NSF panel for education in Materials Science and Engineering, TMS-Solidification Committee, the ASM-MSD Materials Processing Committee, and MRS External Academic Affairs Committees.

Awards and citations he has received include UF Top Researcher or Research Achievements Awards for eight consecutive years, the 1992 ASEE Southeastern Best Paper Award, the 1998 Educator Award of TMS for outstanding contributions in engineering education, TMS 1999 Leadership Award, and the Structural Material Division's 1999 Distinguished Scientist/Engineer Award. He was also elected an ASM Fellow 1992 and a Fellow of TMS in 2000.

March 9, 2004 - Student Night

Topic: UConn Research Presentations

Speaker: UConn Students

Members of ASM/TMS UConn Student Chapter

Directions: Cugino's, 1076 Main Street, Newington, CT
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Retirees - \$15.00
Full Time Students - \$15.00

Technical Chairperson: Leon Shaw

Social Hour Sponsor: TBA

Reservations: Call Laura or Patti at Dynamic Metals (860)
583-3336 by noon March 5th. **Thanks!**

Abstract:

The over seventy research projects of the Graduate and Undergraduate students of UConn's Department of Materials Science and Engineering pass through extensive peer and faculty review with the best competing to be the three selected for presentation to the Hartford Chapter.



Executive Committee

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Vice Chairperson		
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Treasurer	John Rugh	(860) 346-2433
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Due to cost of printing and mailing, ASM Hartford will publish just one issue of the Macrogram in the fall, one winter issue and one spring issue. Therefore, it is particular important that you bookmark the ASM Hartford web site (<http://www.asm-hartford.org/>) and check it regularly for updated information. We will continue to send out email notices to those on our distribution list prior to events.

To receive an email notice of Hartford Chapter events, send an email to web@asm-hartford.org.



ASM Hartford Apprenticeship/Mentor Program

<http://www.asm-hartford.org/apprenticeship.htm>

Make a difference to our profession!

- Build Leaders for the Materials Industry
- Develop Leadership Skills
- Broaden Knowledge of Materials Issues
- Network with Experts in Materials Fields
- Build Relationships

ASM HARTFORD CHAPTER
Jack Piela, Membership
68 Brimwood Drive
Vernon, CT 06066