



ASM Boston Newsletter

November 11, 2013

IN THIS ISSUE



A New Year for ASM Boston 2013-2014

by Jim Ritchey

Welcome to a new year for the ASM Boston chapter. We have a stellar Technical Program lined up and a new cast of officers ready and willing to make this year one of the best. Let us know what you think of the newsletter at webmaster@asmboston.com and we will see if we can get the changes incorporated. Thanks for reading.

Technical Program 2013-2014

9/26/13 Thurs ...Dr. James Cornie, FASM founder & CTO at Metal Matrix Cast Composites (@Hyatt-Cambridge, MA)

9/29/13 Sun... Outing: Tour of Saugus Iron Works with Blacksmith Demonstration (@Saugus Iron Works)

10/24/13 Thur... Jean Mozolic, President at The Mozolic Group (@Hyatt-Cambridge, MA)

11/21/13 Thurs... TOUR of the Plastics Technology Center at UMass Lowell with dinner at Lowell Beer Works (Joint with SAMPE)

1/23/14 Thurs... Dr. Marjorie Senechal, Louise Wolfe Kahn Professor Emerita in Mathematics & History of Science & Technology, Smith College (GUEST Night @Hyatt-Cambridge, MA)

2/27/14 Thurs... Dr. Wego Wang, FASM, Instructor, Harvard Extension School (@Hyatt-Cambridge, MA)

3/27/14 Thurs.... TRUSTEE NIGHT with: Jacqueline M. Earle, Product Support Manager, Remanufacturing & Components Division, Caterpillar Inc., Mossville, IL (@Hyatt-Cambridge, MA)

4/24/14 Thurs... Prof Xi Lin, PhD, Boston University (@Hyatt-Cambridge, MA)

5/22/14 Thurs... Dr. Suri Sastri, FASM, CEO of Surmet Corporation (@Hyatt-Cambridge, MA)

The Hyatt Regency Cambridge is located at 575 Memorial Drive, Cambridge, MA 02139

Phone: (617) 492-1234



Sustaining Members



ASM Fellows



Experiments in composite additives

Teachers learning that the insertion of different materials into a concrete mixture can have dramatic effects on its strength/stiffness!

FOR MORE INFORMATION OR TO PARTICIPATE IN NEXT YEAR'S TEACHER CAMPS

Contact : Peter Jepson @ (857) 205-7661 or jejepjeppo@gmail.com

An Apple for the Teachers

The ASM Boston chapter initiated the first ASM Teachers Camp ever held in the New England region in July 2013. Spearheaded by Peter Jepson, a local team of ASM volunteers and a willing and able team at Wentworth Institute of Technology organized the weeklong event for teachers. Twenty-two (22) high school and middle school teachers attended the Boston Camp held at Wentworth Institute of Technology on July 8-12, 2013. They learned the basics of Materials Science and its applications, and conducted many labs and activities which elucidated the properties of materials, and which are low-cost and suitable for students.

The Educational Foundation of ASM International provides the syllabus for these camps, which have been gaining popularity since the first one took place in 2002: there are 44 camps, all over North America, this summer. Materials Science involves physics, chemistry and engineering and is called 'the enabling technology': most inventions rely on some new material with special properties. New England is a center of Materials Science research and development work, and there is always a need for experts in this field.

The camp offered hands-on experience of real world laboratory experiments that can, hopefully, be utilized back in the classroom as an enhancement to the existing curriculums. The class is offered FREE of charge for the teachers. Instructors are provided by ASM via the Master Teacher Program. The teachers also got to visit a real life forge (Wyman-Gordon in Grafton) and experienced a little life on campus during the weeklong event.

The plan is to start running these camps on an annual basis. The planning process is starting for 2014. If you would like to assist in creating this great opportunity for local teachers, please send us a note.

"This camp was great! Going into it, I really had no idea what Materials Science was, but now I don't know if I'll ever look at things the same. Lisa was so enthusiastic and made learning easy and fun!! Peter and Justin also did a great job and were beyond knowledgeable about their areas of expertise."

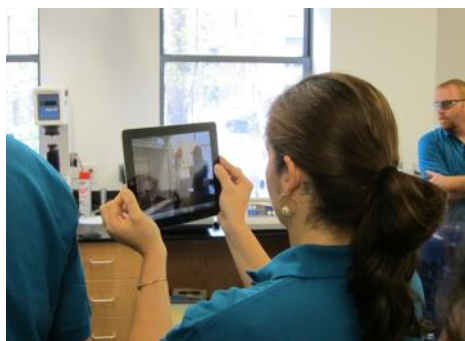
- **Amber Fulton**
Joseph Case Junior High School

PERSONAL VIEW: Peter Jepson on volunteering with ASM

I got roped in for the first Student Camp in New England in 2006: I helped Sanjay Shendye with the Casting module. It was fun to see high-school students watch molten metal running, and walk away proudly with their own castings. After that event, I began to think back to my schooldays and what I knew at that age about careers (nothing!) – and I thought 'Wow, it would have been great if I could have done this sort of thing – meeting professional scientists and engineers, understanding what these people do 'at work' every day, and how science and engineering play a role in the world'.

A couple of years ago, I decided that working for somebody else isn't all I ever want to do, so I declared retirement and quit. I made a list of about 10 things I wanted to do with my time. One was to become a Master Teacher with ASM, so I could lead Teachers' Camps. I haven't even touched most of the items on the list yet, but I contacted ASM and went through the training, and found it's just as much fun seeing the 'Wow, now I get it!' expression on teachers' faces as it is on students' faces.

The next step I thought needed to be taken was to hold Teachers' Camps in New England. Is Boston the hub of the universe or what? I was amazed to find that WIT really wanted to host it, teachers really wanted to come, and several organizations really wanted to sponsor it: so the camp ran with a great spirit, and maybe I am helping to do something really worthwhile!



Thanks for contributions go to the ASM Educational Foundation and WIT, as well as financial support from the Boston and Rhode Island ASM chapters, Boston-chapter sustaining members, H.C. Starck and Instron. These are companies that appreciate that fulfilling their need for skilled and qualified staff relies, in the long term, on high-school teachers generating interest in science and engineering among their students.

STUDENTS HARD AT WORK!



Lemon-AIDE

Experimental research at its finest!



Bruins-Balance

Students from the Boston Materials Experience got some real hands on experimental experience!

FAST FACTS

91%

Learned a lot at Materials Experience

88%

Had fun at Materials Experience

DID YOU KNOW?

There are over 100,000 Materials Science Engineers in the USA with a median salary of over \$70,000.



Crack growth studies at Worcester Polytechnic Institute's ASM Materials Experience!

Are You Experienced?

by Patrick Hogan

The Boston chapter continued to hold the ASM Materials Experience New England in 2012-13, working closely with the Central MA, Northern New England and Rhode Island chapters. For the second year, two events were held, on May 6 at Worcester Polytechnic Institute and on May 13 at Boston University. The 2013 series broke a record for the most students reached, as over 130 students attended the two days.

For those unfamiliar, the Materials Experience is an annual event to show students the wonder of materials science through demonstrations and hands-on activities. This year the topics included Hydrogels, Plastics - where students mold their own handle for a mini screwdriver, Fatigue and Fracture and perennial crowd-favorite Cryogenic Phenomena amongst many others. The stations are led by volunteers from ASM, local industry and the host schools. Graduate students from each school work closely with organizers and are an integral part of the success of the event, which often proves to be an excellent networking event.

In a survey given to each attending student, 91% reported they learned a lot about materials science & engineering, and almost all of them (88%) had fun doing it. The planning committee for the 2014 events will be meeting later this fall to start the effort to repeat the success of the past 9 years. Anyone interested in

joining the committee can contact the organizers at matcampne@gmail.com

ASM Boston Website

Have you been checking out our website? Don't forget that you can review old meetings, see pictures, and even sign up for attendance at the monthly technical meeting. You even get to place your "food" order for the meeting! Visit on a regular basis to stay up to date on the happenings of our local chapter. Email our webmaster for additional ideas and thoughts on items that you believe would be worthwhile seeing.

Check out the site at:

<http://www.asmboston.org/>



CHAPTER MEMBER INFORMATION

Bob Roll



Irwin Robert Roll, a pillar of the ASM Boston Chapter, passed away on January 21, 2013.

From 1943 to 1946, Bob Roll served in the US Army Air Corps and served as a Navigator in a B-29 in the Asia-Pacific Theater as a Second Lieutenant.

In 1950 Bob earned his B.S., *cum laude*, in metallurgical engineering at Purdue University. He went on to obtain an MS and Doctor of Science at MIT, finishing in 1958.

Bob's career focused on metallurgical production, fabrication, process control, and failure analysis. He worked for Nuclear Metals, Inc., AMF Canada, Ltd., Nuclear Fuel Services, Inc., and Raytheon Missile Systems. He was a member of Tau Beta Pi, Sigma Xi, Sigma Gamma Epsilon, and a life member of ASM.

We members of ASM Boston remember Bob fondly. He are few miscellaneous comments from members:

"Bob was authentic, kind and humble in spite of his fantastic accomplishments. We were so fortunate!"

"I still cannot believe that he is gone. The sadness hit me as I heard the news and stays.... His images and his smile, full of kindness, appear right in front of me as soon as I see Bob's name in my email box...."

"Bob was a member and our Executive Committee for many years. He was our financial guru, leading the key decisions on chapter investment, cash flow management, budget planning and expense reporting for many years. Bob was instrumental in maintaining our chapter healthy financial condition. The healthy finance has allowed us to (subsidize student attendance at dinner meetings, support the Materials Camps for high school students, and the recent New England Teachers Camp.)"

"Bob was a great mentor. He coached several chapter executive members to be chapter treasurers. He provided the continuity for the treasurer's role to be effective. Whenever there was a gap in Treasurer's role, Bob stepped in to help as transition and coached the next incoming treasurer."

"Bob was a master in negotiation. When we needed an alternative venue for our member monthly meetings several years ago, it was Bob who got us the wonderful room in Hyatt at a very reasonable cost. Today we are still enjoying the arrangements that Bob made for us."

But it is his kindness, warm heart, encouraging and positive attitude touched people the most. I got strong support from him when I stepped up as the Chapter Chairman and he made me feel accomplished when I handed over the responsibility to the next Chairman. I am pretty sure he did that for every Chairman over the years. He was so well-liked, and he had a way of making people feel good about coming to Executive meetings or member meetings. It was always a delight to see him and he will be greatly missed.

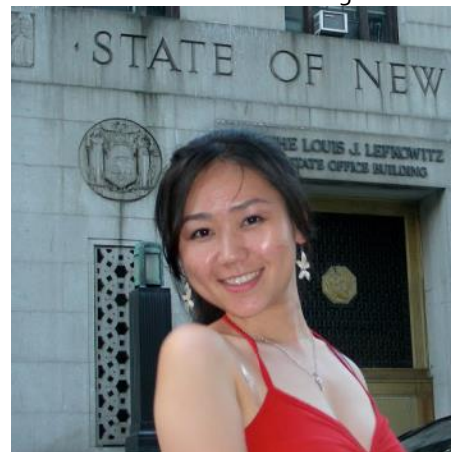
Always warm and engaging, Bob usually asked pointed questions at both executive committee meetings and

dinner meetings. He was truly a professional and a friend.

Membership Updates

Patrick Hogan, our Vice Chairman at ASM Boston, attended Leadership Days in Cleveland, OH this past July. He reported that it was an excellent experience and returned with an excitement around the increasing amount of detailed provided to us in the corporate website. Lots of details have been added both the chapter websites and the ASM International site. Check it out: www.asminternational.org.

Dr. Nancy Li, our past secretary at ASM Boston, has landed a new job in the Boston area as a Senior Product Development Engineer at Shell Techworks Boston. Congratulations.



SOCIAL MEDIA UPDATE

Don't forget to checkout our new social media sites and "JOIN" today.

We can be found on **LinkedIn** at:

<http://www.linkedin.com/company/asm-boston>

and on **Facebook** at:

<https://www.facebook.com/events/219215191542919/#!/groups/360276757420675/members/>

Awards, Updates & Other Info

Congratulations Stan!

Dynamet Technology, Inc., has announced that it has won the International Titanium Association's (ITA) 2013 Titanium Applications Development Award. The founder, President and Chief Executive Officer of Dynamet Technology, Inc., Stanley Abkowitz, will accept the award at the Titanium 2013 conference, October 6-9, Las Vegas, USA.

Located in Burlington, MA, USA, Dynamet Technology has pioneered the development and application of titanium Powder Metallurgy (PM Ti) technology for some 40 years. Acceptance of PM Ti as a substitute for conventional Ti-6Al-4V mill products or forgings for use in aerospace components has been a long-sought objective that marks a breakthrough for the PM titanium industry, stated the company. Ti-6Al-4V is the most widely used titanium alloy for both aerospace and non-aerospace applications.

The annual ITA award recognizes exceptional contributions to the advancement of technology and applications in the titanium industry. Brett Paddock, President of the ITA board, and the President and Chief Executive Officer of Titanium Industries Inc., Rockaway, NJ, USA, stated, "As a result of more than 40 years of sustained effort, Dynamet Technology, Inc. has achieved acceptance for use of the technology in commercial aircraft manufacturing. The ITA is pleased to honor this significant achievement, which promises to promote the use of titanium in many future applications through efficient production of near-net shapes using this innovative technology."

Dynamet Technology, Inc. recently garnered approval from Boeing Co., through Boeing Commercial Aircraft (BCA) after an extensive evaluation of Dynamet Technology's Ti-6Al-4V alloy

product and development of a Boeing Materials Specification for powder metal titanium alloy manufactured by Dynamet Technology's PM Titanium processing approach. This effort resulted in Dynamet Technology, Inc. becoming the sole qualified supplier for Ti-6Al-4V powder metal products, meeting the requirements of the recently released Boeing Material Specification.

The Dynamet Technology, Inc. EBS (Elemental Blend Sintering) process involves cold pressing, vacuum sintering plus an optional hot-isostatic pressing (HIP) step, all of which yields low-cost, high-density, preformed titanium alloy shapes. According to Stan, there are two key breakthrough aspects in Dynamet Technology, Inc. process. First, the company's Powder Metallurgy process achieves tensile properties comparable to conventional wrought titanium products. Second, the process utilizes special tooling technology, developed by Dynamet Technology, Inc., to produce near-net shapes.



Stan Abkowitz is the CEO of Dynamet Technology, Inc. and an ASM Fellow and has received the ASM 1993 William Hunt Eisenman Award and the 2001 Lifetime Achievement Award. He has been an ASM member for more than 59 years.

Stan added that the process also supports the development of novel alloys. Since part production involves sintering rather than melting, entire new titanium alloy families, incorporating the advantages of high-performance metals such as tungsten, zirconium, tantalum and niobium as alloying elements, can be created.

ASM International Website

Our parent, ASM International, has also been making significant upgrades to their website. You can now logon to the site and custom configure you view to see what you want to see. You can purchase books, sign up for courses, and read the daily news associated with materials development around the world.

Visit the website at:

<http://www.asminternational.org/portal/site/www/home/>



Surmet wins ACerS Corporate Technical Achievement Award



Surmet Corp. one of our sustaining members received The American Ceramic Society's (ACerS) prestigious Corporate Technical Achievement Award (CTAA) for this year for the development and commercialization of its ALON® Transparent Optical ceramic. The award recognizes and honors achievements that show significant

technical merit and represent a gain to society through commercialization of the technology within the preceding eight years.

"Bringing ALON® to the marketplace is a very satisfying accomplishment indeed.... Surmet has been able to carve out a special niche in the highly cost competitive global market place. This is more easily said than done as most inventions die in the lab and never make it to the commercial market place," said Dr. Suri Sastri, Founder, Chairman and CEO of Surmet Corp. who is also FASM and one of our past chairs, and the recipient of ASM's William Hunt Eisenman Award.

Founded in 1982, Surmet Corporation is an Advanced Materials Technology Company, with a vertically integrated manufacturing capability. In addition to multiple facilities in Massachusetts, including its Headquarters in Burlington, Surmet also has R&D and manufacturing facilities in Buffalo, NY and Murrieta, CA.

Best known for its ALON® Optical Ceramic, Surmet is also a pioneer in other advanced material technologies including IR Optics, Spinel Optical Ceramic, Aluminum Nitride, Dissimilar materials joining, advanced optical coatings, and Optics Fabrication.

100th Anniversary Gala



ASM International celebrated their 100th anniversary in Montreal, Canada on the opening night of the MS&T Conference on Sunday, October 27, 2013. With over 300 people in attendance, the crowd was greeted with a host of ASM Speakers.

The future looks bright for this hard working volunteer organization. Additionally, the crowd was entertained by guest speaker Dr. Peter Dimandis. The Chairman and CEO of the [X Prize Foundation](#), a non-profit focused on designing and launching large incentive prizes to drive radical breakthroughs for the benefit of humanity, dazzled the crowd with story after story of how the future "Abundance" will be a positive experience for people around the globe.



September 26, 2013 Talk

Dr. James Cornie, FASM founder & CTO at Metal Matrix Cast Composites, gave an invigorating talk about the history of Metal Matrix Composites. Central to his presentation was the interesting history associated with the development of Metal Matrix Composites, Inc.



As with other composites, the interface between the fiber and matrix is of considerable importance. Counter-intuitively, in the case of metal matrix composites, a weaker interface can lead to a higher overall tensile strength, by allowing the first fiber(s) to break to pull free of the matrix. Dr. Cornie also described the benefits of careful alloy choice in preventing phase segregation and poor as-cast microstructure. He then went on to show a timeline of MMC

technology transfer from research into commercial applications. The presentation closed with a discussion of some major applications of metal matrix composites, such as thermal management of electronics, and the advantages that MMCs bring to these applications, including their high thermal conductivity and readily-tailored thermal expansion properties.

October 24, 2013 Talk

Jean Mozolic, President at the Mozolic Group, gave us a in depth view of Thermal Spray technology. She began by reviewing some of the history of thermal spray, including the accidental discovery that led to the creation of the Union Carbide (now Praxair) detonation gun. This led into a brief history of the two major thermal spray companies, as well as of thermal spray technology itself.

From there, the talk moved into its main segment, discussing common applications of thermal spray and the technology's often-overlooked relevance in everyday life. Her first major example was the piston rings in automotive engines, a ubiquitous product using thermal spray technology. The largest market for thermal-sprayed products, however, is the aerospace industry, where such coatings are used in a variety of applications, from coatings so wear-resistant that they changed the limiting factor in part life from wear to fatigue, to thermal-sprayed chrome coatings replacing the older (and far less environmentally-friendly) hexavalent chrome coatings for landing gear.

Ms. Mozolic concluded with a review of the materials most commonly used in thermal spray, a brief discussion of the New England thermal spray community, and current trends in the technology, such as integration into overall production lines, and portable coating equipment for on-site work.

Ad space is coming soon to the ASM Newsletter! Contact james_ritchey@instron.com for more info!