Menu: Roast Top Sirloin of Beef, Sesame Chicken, Baked Tilapia with Julienne Vegetables, Fresh Spinach Salad, Oven Roasted Red Skin Potatoes, String Beans Lyonnaise and Brownie Delight.

Social Hour: 6:00 - 7:00 p.m.    Dinner: 7:00 p.m. Prices: Members & Guests: $35.00; Retirees: $24.00; Students: $15.00

Spouses and guests are invited and welcome. Meetings held at Williamson Banquet, on the corner of Rt. 611 (Easton Road) and Blair Mill Rd., Willow Grove, PA 19044   For directions: www.williamsonrestaurant.com.

Meeting Registration: PLEASE NOTE**: Reservations must be made no later than 5 pm on the Tuesday before the meeting to guarantee dinner availability. Register to attend our meeting on our website http://philadelphia.asminternational.org. If you have a large group attending or do not have access to the web site, please contact Trevor Jones at 215-721-1502 ext 1220 to register.

SPEAKER: DR. DONALD R. MUZYKA
CEO (retired), Special Metals Corp.

TOPIC: Personal Observations on the ASM Foundation’s Materials Camp Program

Dr. Donald R. Muzyka is retired President and CEO, Special Metals Corporation, New Hartford, NY. He has been active in ASM since joining in 1963 and was elected a Fellow in 1977. He has been involved in many Chapter activities and was Chairman of the Lehigh Valley Chapter in 1976-1977. He has served on many ASM committees including the Diamond Decade, Awards Policy, Nominating, Finance, and Investment. He was a Trustee in 1982-84. He was President of ASM in 2003, served as VP in 2002 and Past President in 2004. Don joined the Board of the ASM Materials Foundation in 2000 and has served as a Trustee. He was Treasurer from 2004 to 2010.

The duties of a Foundation Board Member include working with students, raising money and "running the business". Don has been involved with all three. In particular, since he retired in 2000, Don has been active in assuring that the ASM/Lehigh Univ. Student and Teacher Materials Camps have sufficient funding. He tries to inspire the Students into studying Materials by a presentation at the closing of each Student Camp at Lehigh. He has also been successful in encouraging several individuals, companies and Foundations to volunteer at and/or financially support ASM Materials Camps.

Continued on page 3

Technical Chairperson: Al Singmaster, Singmaster Personnel Service

Meeting Sponsors: Al Singmaster Personnel Service and Struers Inc.
Chairperson’s Message
October 2014

Autumn is here, and the weather is gorgeous! I’m looking forward to wearing sweaters and walking our dogs through the beautiful falling leaves.

The Eagles have a great start this year! Go Birds! No comment on the Phillies… The ASM season has started as well. Our September speaker, Mr. William Wulfsohn, was captivating presenting the History of Carpenter Technology and outlining their plan for sustained growth for years to come. In October, we are looking forward to hearing from our Eisenman Award Winner, Dr. Donald Muzyka, who will discuss his Personal Observations on the ASM Foundation’s Materials Camp Program with Particular Emphasis on the Lehigh Valley Chapter’s Student and Teacher Camps.

Remember that our November meeting will be held at Drexel University again this year for Young Members Night.

I hope to see you all at October’s meeting on October 16th, and encourage you to introduce someone new to ASM. Please let us know if you have an ideas or suggestions how to make the Chapter better. Or, if you are interested in volunteering, please let us know.

Also, if you have ideas for an alternate venue for future meetings, please drop me a line @ jerri.jefferies@struers.com. Have a great week!

Sincerely,
Jerri Jefferies
2014-2015 Chapter Chairperson

Upcoming Events...

10-16-14 Thursday  Eisenman Award Night - Topic: Personal Observations on ASM Foundation’s Materials Camp Program, Williamson Banquet, Willow Grove, PA
11-20-14 Thursday  Young Members Night - Topic: TBA at Drexel University
2-19-15 Thursday  Continuing Education Night- Topic: Conservation & Restoration of Historic Metal Sculptures Williamson Banquet, Willow Grove, PA
4-16-15 Thursday  Sustaining Members Night - Sustaining Members Mini Expo/Annual Charles F. Burns Poster Contest, Williamson Banquet, Willow Grove, PA
5-21-15 Thursday  Honors & Past Chairmen Night - Awards & Honors

This Month’s E-Newsletter Sponsored by:

LABORATORY TESTING INC.
www.labtesting.com
Richard D. Heist
Sales Manager
2331 Topaz Drive, Hatfield, PA 19440

EXPAND your materials knowledge
For information on our programs, please visit
www.materials.drexel.edu

Materials Science and Engineering
Don earned his B.S. in Mechanical Engineering from the Univ. of Mass. in 1960. He received his M.S. in Metallurgy from RPI in 1966 and his PhD in Materials Science from Dartmouth in 1967. He devoted his entire career, spanning over 40 years, to the specialty metals industry, starting as a metallurgist at Pratt & Whitney Aircraft in 1960. After completing his graduate studies in 1966 he joined Carpenter Technology where he was appointed Vice President Technical in 1979. In 1982, he joined Cabot Corp. where he became manager of Cabot Refractory Metals. He completed his career at Cabot as VP Corporate R&D. Don Joined Special Metals as President in 1990; he became President and CEO after taking the Company public in 1996. He retired on Sept 1, 2000.

Don has received a number of awards including the Bradley Stoughton Award from the Lehigh Valley Chapter, 1981, Univ. of Mass Engineering Alumni Award, 1984, ASM/TMS Distinguished Lecture in Materials and Society, 1993 and ASM Honorary Membership, 1999. In 2002 he presented the Zay Jeffries Lecture to the ASM Cleveland Chapter. In 2014, he received the ASM Foundation’s George A. Robert’s Award for contributions to the success of the Foundation’s student outreach efforts. Don has also published over 25 articles and papers and holds seven US patents that are directly attributed to his significant work and advancement of the development of high performance alloys.
Improving Titanium Friction and Wear Properties

An experiment with Oak Ridge National Lab, published as "Surface Engineering to Improve the Durability and Lubricity of Ti-6Al-4V Alloy"; Bansal, Eryilmaz, Blau, evaluated titanium for weight reduction in heavy truck diesel engines. A wide variety of surface treatments were evaluated for friction and wear including: "diffusion treatments, hard coatings (TiN and CrN [PVD]), a soft coating (Cu-Ni-In), titanium-matrix TiB2 in situ-formed composite, and shot peening".

Two conclusions from the study are:
- (b) CrN coated Ti64 specimens had the least amount of wear, followed closely by DLC (diamond-like-carbon) coated Ti64 specimens.
- (c) Nitrided...specimens yielded the lowest COF, and their wear is also comparable to those of CrN and DLC coated specimens.

Titanium solution nitriding provided the lowest coefficient of friction (COF) and high wear resistance. The process was performed by Solar Atmospheres in a vacuum furnace using partial pressure nitrogen at temperatures in the annealing range. Solution nitriding is a diffusion process where nascent nitrogen is adsorbed and diffused into the titanium matrix. Like other diffusion processes, the depth of the diffusion zone is dependent on the time of the treatment.

Using Ti-6Al-4V with a core hardness of 30 HRC as the base metal, Solar Atmospheres has achieved hardness readings in the mid-60's to upper-60's HRC at a depth of 0.0076mm (0.0003") followed by a gradual decrease in hardness to the core over a distance of 0.25mm (0.01"). Shorter cycle times have produced hardness in the mid-50's to high-50's HRC and shallower total case depths.

Solution nitriding is not a coating like CrN or DLC. It is a thermo-chemical treatment where nitrogen becomes an integral part of the titanium matrix. Unlike a coating, it does not have to initially bond well to work and it will not spall away from the base metal. That's because it is the base metal at the surface; it's a metallurgical case that significantly strengthens the base metal just as conventional carburizing and nitriding of steel does, allowing for increased service loads along with friction and wear performance properties.

Titanium has many beneficial applications from the medical, aerospace, and automotive industries. Unfortunately, titanium also has poor tribological properties, that is, it has a high COF when in moving contact with structural metals. The result is poor sliding and adhesive wear resistance often resulting in failure by galling (cold welding). In order to provide adequate serviceability for metal-to-metal applications where friction and wear are a concern, some type of surface treatment is typically required.

Solution nitriding of titanium opens new markets for titanium in friction and wear applications. Oak Ridge Laboratory chose Solar Atmospheres to conduct the solution nitriding portion of the test due to the expertise, previous work with the process, and technical reputation of the company. Other companies interested in running titanium solution nitriding tests should contact Don Jordan, vice president and corporate metallurgist for Solar Atmospheres at don@solaratm.com.

Mission Statement - 
ASM International, Philadelphia "Liberty Bell" Chapter

The Philadelphia "Liberty Bell" Chapter of ASM International supports the development and continuance of the materials industry in the Philadelphia area. Chapter activities strive to inform the local technical community of new developments in materials, raise the visibility of the materials industry, provide educational opportunities in materials technology, recruit new people and organizations into materials-related activities, and provide networking opportunities for members of the materials community. The Chapter works with ASM International to use our joint resources to accomplish this mission.
A Special Thank You to our 2014-2015 yearbook advertisers this year. We appreciate your continued support and for helping keep this chapter strong even through this past year.

Allied High Tech Products  
ArcelorMittal Stainless & Nickel Alloys  
Atlantic Heat Treat  
Bennett Heat Treating & Brazing Co., Inc.  
Buehler Ltd.  
Consarc  
Craig Clauser Engineering Consulting Inc.  
Donovan Heat Treating Co., Inc.  
Electron Energy Corp.  
Element Materials Technology  
Ely Consulting Services LLC  
Engineered Arresting/Zodiac  
Evans Heat Treating Co.  
Excel Technologies Inc./Extec  
Forensic Sciences, Inc.  
Inductotherm Corporation  
Ipsen Inc.  
L & L Special Furnace Co. Inc.  
Laboratory Testing Inc.  
LECO Corp.  
Metlab Corporation  
Micron Inc.  
Penn Stainless Products  
Pressure Technology Inc.  
RAD Engineering Corp.  
Rex Heat Treat  
Robert Wooler Company  
S-Bond Technologies LLC  
Alan L. Singmaster Personnel Services  
Solar Atmospheres Inc.  
Solar Manufacturing Inc.  
Struers Inc.  
Superior Tube Inc.  
Tinus Olsen Testing Machines Co., Inc.  
University of Pennsylvania  
Villanova University, Mechanical Eng. Dept.  
Westmoreland Mechanical Testing Machine  
Williamson Restaurant

For more info about the ASM Liberty Bell Chapter...
Contact Chapter Chairperson Jerri Jefferies at 215-364-2266 or email jerri.jefferies@struers.com

To ensure you receive your E-newsletter and yearbook:
Please update your membership listing or your company affiliation listing. You can do this by calling Membership Service, ASM International at 1-800-336-5152 or using the ASMI website at www.asminternational.org. This will permanently update your information.
We depend on ASM International to receive our updated Chapter roster.

This Month’s E-Newsletter Sponsored by:

MetLab Corporation
FREE SHIPPING & 10% OFF
Starting at $2,995
Starting at $6,995
Starting at $5,995
www.metlabcorp.com
1-800-828-6866

Solar Atmospheres
Supporting the work of ASM Philadelphia “Liberty Bell” Chapter
Vacuum Heat Treating | Brazing | Carburizing | Nitriding
800•347•3236
www.solaratm.com

President’s Club 2010
Cell: 440-570-4381