

Central Massachusetts Chapter Newsletter



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Welcome to Our 2016-2017 Season!

As you may or may not be aware, our Chapter Chairman, Alex Feng, has accepted a new position in the Midwest. We would like to wish Alex the best of luck with his new position, but his departure leaves us with a leadership vacancy. Therefore, as the vice chairman, I will be assuming the Central Massachusetts Chapter Chairman's duties for the remainder of the year. The vice Chair position will be filled by Anastasios Gavaras. I look forward to building on the success of previous years. Our chapter we will work continuously towards providing an environment that will retain existing and attract new members while providing a path for learning and sharing information.

Welcome everyone to the 95th season of the Central Massachusetts Chapter of ASM International. The first portion of this season was informative and exciting with our visit to the Wormtown Brewery, Zanconato Cycles and JEOL USA Analytical. Each event was spouse and guest nights. The remainder of the year, there will be exciting meetings with interesting topics in Materials Science and Engineering, including joint meetings with Boston and Rhode Island Chapters, Trustee meeting, WPI student MQP presentations night, 2017 New England Materials Experience at WPI, our annual golf outing, and presentations on Additive Manufacturing technology.

The Central Mass Chapter of ASM International committee consists of both young professionals and experts with long experience in the Materials field who are eager to share their passion with the next generation of students.

Thank you for your support of the Central Massachusetts Chapter of ASM international.

Steven Roccanti
2016-2017 Chapter Chair
Central Massachusetts Chapter – ASM International

A special thanks to our Sustaining Member companies:

Bodycote
Buehler
Country Heat Treat
Excel Technologies Inc.
Exponent
Hardline Heat Treating
Hayden Corporation
MetLab Inc.
MMR Group Incorporated
United Service Company
Worcester Polytechnic Institute

2016-2017 Meeting Schedule

DATE	TOPIC	SPEAKER	FORMAT	LOCATION
Sept. 21	Wormtown Brewery Tour	Wormtown Staff	Spouses and Guest Night	Wormtown Brewery, Worcester, MA
Oct. 12	Bike Building	Mike Zanconato	Spouses and Guest Night Note Bike ride starts at: 3PM	Manchaug Mills Sutton, MA Zanconato Custom Cycles and Braxton Hall
Dec. 7	JEOL Instruments	JEOL staff		11 Dearborn Rd, Peabody, MA
Jan. 26, 2017	Dust Explosion	Tim Myers, Exponent	Joint Meeting with ASM-Boston	John Harvard's, Framingham
Feb. 15	Additive Manufacturing	Rainer Heber	Joint Meeting with ASM-RI	Village Heaven Restaurant, Forestdale RI
March	ASM Trustee Speaker	TBD	TBD	Dino's Restaurant, 13 Lord St, Worcester, MA
April 20	WPI Undergraduate Major Qualifying Project Poster & Presentation Competition	Top 3 finalist teams	Student Night & Past Chair's Night	O'Connor's Worcester MA
May 8	12 th ASM NE Materials Experience	-	Materials Science for High School Students	WPI, Worcester MA
May 26	Annual Golf Outing	2017 Outing	Election of Officers, Golf and Barbecue	Heritage Golf Club Charlton, MA



Metallurgy for Non-Metallurgists

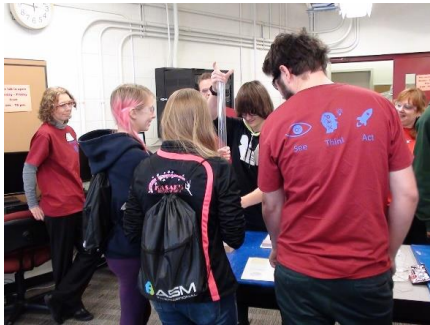
The Central Massachusetts Chapter of ASM International, in conjunction with ASM Education, is pleased to offer Metallurgy for Non Metallurgists in Spring, 2017. More information to come. Please check out website for updates.

2016 ASM New England Materials Experience

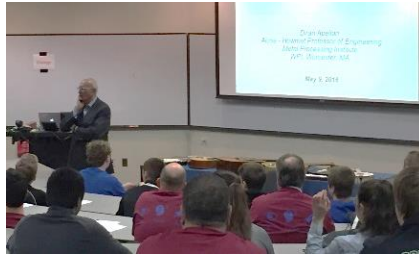
This year was the 11th annual New England Materials Experience at WPI and the 5th annual at Boston University. These events are jointly sponsored and organized by the Central Massachusetts, Boston, Rhode Island and Northern New England Chapters of ASM. Students, teachers and parents enjoyed learning about many facets of the world of Materials Science & Engineering. Students learned about selecting materials to design a bicycle helmet using chocolate to simulate the brain during impact. They learned about fatigue and fracture, shape memory alloys and hydrogel for biomedical application. They also learned how to turn bananas into hammers with liquid nitrogen, and casted their own aluminum parts.

The WPI Materials Experience took place on Monday, May 9th with students from 14 different high schools. Students began the day with an introduction from Professor Diran Apelian. He introduced the students to how materials impact their lives every day. The day closed with a talk and demonstration by Fay Butler. Fay combines materials science, engineering, machining, design and art in his work with automobile, motorcycle and car designers around the world.

The students were divided into eight groups to attend each of the different modules, including cryogenics, shape memory alloys, musical materials, electrochemistry, casting, mechanical behavior, hydrogels, and fatigue. At each of these stations, students were able to experience a different aspect of materials science ranging from experiments like smashing cryogenically frozen flowers and racquet balls to the life-saving applications of hydrogels and shape memory alloys. Over lunch students were able to talk with graduate students, professors, and professionals from the Materials World.



Students learning about materials selection for impact resistance



Opening speech from Professor Diran Apelian



Students learning about casting



Closing speech on metal forming from Fay Butler



Students learning about electrochemistry with lemons and potatoes



Students learning about liquid nitrogen



Students fixing a pig lung with hydrogel



Students learning about musical materials



Students learning about atomic arrangements in metals and their influence on mechanical properties



Students learning about shape memory alloys

Central Mass Chapter ASM Golf Outing



The Central Massachusetts Chapter of ASM held it's Annual Spring Golf Outing on May 26, 2016 at the Heritage Country Club, Charlton MA (Route 20).

This year seventeen teams competed for the winners spot, with the team from Hardline Heat Treating victorious! The outing finished with the awarding of prizes.



First Place Team: Hardline Heat Treating Inc.

Frank Blanchard (Central Mass. Chap. Golf Outing Chair - right) presents this year's First Place Team Awards to Brandon Houlihan, Chris O'Connor, Josh Fasshauer and Mike Jezierski. Thanks to all who attended for making the outing a success. Special thanks to Frank Blanchard for his untiring efforts to plan and conduct the outing. See you on the links next year!

Also, congratulations to Frank Blanchard, who was recognized by 2016 ASM Chapter Volunteer Honor Roll for his exemplary contributions to ASM!!

Sustaining Member Company Benefits

ASM Worcester offers a unique opportunity for local companies in the materials industry to benefit from corporate membership. These benefits include:

- Membership for one individual (since Sustaining Membership is only \$175 annually, this decreases the individual's membership cost from \$113 to \$62).
- Discounted price for employees to attend local ASM courses held by the Worcester Chapter.

- A link from our website (www.asm-ma.org) to your company website.
- Recognition on our website of your company as a supporting Sustaining Member.
- Recognition of your company as a sponsoring Sustaining Member at the beginning of each monthly meeting's technical presentation.

Are there benefits that you would like that aren't listed? Please contact us with your

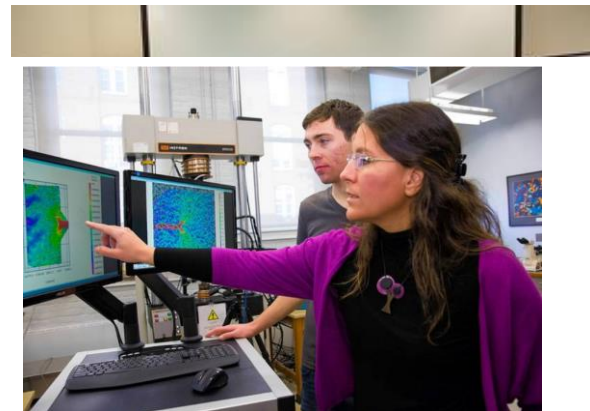
suggestions at asmworc@asm-ma.org.

Our goal is to increase how Sustaining Memberships in ASM Worcester serve our sponsors.

Frank Blanchard,
Chapter Treasurer

WPI Faculty News

On Wednesday March 23rd, a celebration was held for Professor Yan Wang. Yan Wang has been granted tenure and promoted to Associate Professor of Mechanical Engineering. The director of WPI's Electrochemical Energy Laboratory and an affiliated faculty member in the Center for Resource Recovery and Recycling (CR3), part of the university's Metal Processing Institute, Wang conducts work related to energy storage technologies. He is currently developing a novel recycling method for lithium-ion batteries that has been supported by the National Science Foundation (NSF) and the United States Automotive Battery Consortium. The patented technology is the basis for a new company, Battery Resources LLC, which recently received a Small Business Technology Transfer (STTR) award from the NSF.



Professor Diana Lados with her Ph.D. student, Anthony Spangenberg, on the WSJ

WPI on The Wall Street Journal

WPI was ranked #1 by The Wall Street Journal in offering both great research and great teaching. The study conducted by The Wall Street Journal/Times Higher

Did you know?

The most famous table, at least in the chemistry field, has changed! Four (4) new elements have been added to the Periodic Table:

- Element 113:* Ununtrium, Uut by Japanese Researchers at the Riken Institute.
- Elements 115 & 117:* Ununpentium, Uup & Ununseptium, Uus, respectively by a collaborative team from Nuclear Research in Russia, Lawrence Livermore National Laboratory, and Oak Ridge National Laboratory.
- Element 118:* Ununoctium, Uuo by Russian and LLNL researchers.

The chemistry community is finally happy to see the Periodic Table finally completed down to seventh row!

IUPAC Periodic Table of the Elements

1 H hydrogen (1.00794)																	2 He helium (4.002602)	
3 Li lithium (6.941)	4 Be beryllium (9.0122)	Key										5 B boron (10.811)	6 C carbon (12.011)	7 N nitrogen (14.0064)	8 O oxygen (15.999)	9 F fluorine (18.998)	10 Ne neon (20.180)	
11 Na sodium (22.990)	12 Mg magnesium (24.305)	atomic number Symbol name standard atomic weight										13 Al aluminum (26.982)	14 Si silicon (28.086)	15 P phosphorus (30.974)	16 S sulfur (32.06)	17 Cl chlorine (35.45)	18 Ar argon (39.948)	
19 K potassium (39.098)	20 Ca calcium (40.078)	21 Sc scandium (44.956)	22 Ti titanium (47.88)	23 V vanadium (50.942)	24 Cr chromium (51.996)	25 Mn manganese (54.938)	26 Fe iron (55.845)	27 Co cobalt (58.933)	28 Ni nickel (58.693)	29 Cu copper (63.546)	30 Zn zinc (65.38)	31 Ga gallium (69.723)	32 Ge germanium (72.630)	33 As arsenic (74.922)	34 Se selenium (78.96)	35 Br bromine (79.904)	36 Kr krypton (83.80)	
37 Rb rubidium (85.468)	38 Sr strontium (87.62)	39 Y yttrium (88.906)	40 Zr zirconium (91.224)	41 Nb niobium (92.906)	42 Mo molybdenum (95.94)	43 Tc technetium (98)	44 Ru ruthenium (101.07)	45 Rh rhodium (102.91)	46 Pd palladium (106.36)	47 Ag silver (107.868)	48 Cd cadmium (112.411)	49 In indium (114.818)	50 Sn tin (118.710)	51 Sb antimony (121.757)	52 Te tellurium (127.6)	53 I iodine (126.905)	54 Xe xenon (131.29)	
55 Cs cesium (132.905)	56 Ba barium (137.327)	57-71 lanthanoids		72 Hf hafnium (178.49)	73 Ta tantalum (180.948)	74 W tungsten (183.84)	75 Re rhenium (186.207)	76 Os osmium (190.23)	77 Ir iridium (192.222)	78 Pt platinum (195.084)	79 Au gold (196.967)	80 Hg mercury (200.59)	81 Tl thallium (204.383)	82 Pb lead (207.2)	83 Bi bismuth (208.98)	84 Po polonium (209)	85 At astatine (210)	86 Rn radon (222)
87 Fr francium (223)	88 Ra radium (226)	89-103 actinoids		104 Rf rutherfordium (261)	105 Db dubnium (262)	106 Sg seaborgium (263)	107 Bh bohrium (264)	108 Hs hassium (265)	109 Mt meitnerium (266)	110 Ds darmstadtium (267)	111 Rg roentgenium (268)	112 Cn copernicium (269)	113 Uut ununtrium (270)	114 Fl flerovium (271)	115 Uup ununpentium (272)	116 Lv livermorium (273)	117 Uus ununseptium (274)	118 Uuo ununoctium (276)
57 La lanthanum (138.905)		58 Ce cerium (140.12)	59 Pr praseodymium (140.908)	60 Nd neodymium (144.24)	61 Pm promethium (145)	62 Sm samarium (150.36)	63 Eu europium (151.964)	64 Gd gadolinium (157.25)	65 Tb terbium (158.925)	66 Dy dysprosium (162.50)	67 Ho holmium (164.930)	68 Er erbium (167.259)	69 Tm thulium (168.930)	70 Yb ytterbium (173.054)	71 Lu lutetium (174.967)			
89 Ac actinium (227)		90 Th thorium (232.038)	91 Pa protactinium (231.036)	92 U uranium (238.029)	93 Np neptunium (237)	94 Pu plutonium (244)	95 Am americium (243)	96 Cm curium (247)	97 Bk berkelium (247)	98 Cf californium (251)	99 Es einsteinium (252)	100 Fm fermium (257)	101 Md mendelevium (258)	102 No nobelium (259)	103 Lr lawrencium (260)			

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

For notes and updates to this table, see www.iupac.org. This version is dated 8 January 2016. Copyright © 2016 IUPAC, the International Union of Pure and Applied Chemistry.

New Fossil Fuel?

Hydrogen, biofuels, and batteries serve as alternatives to traditional fossil fuels like coal, natural gas, and oil.

Recently, researchers at McGill University in Canada claimed that tiny metal powders could be used as a more viable long-term replacement for fossil fuels! Similar in size to fine flour, these metal powders can be burned and react with air to form stable, non-toxic solid-oxide products and power external combustion engines.

The primary candidate for this idea is of course iron, as it is heavily produced by various industries and can be recycled with well-established technologies.

More info: www.mcgill.ca

4D Printing Better than 3D?

What happens when a 3D printed part changes shape after its production? It becomes a 4D printed part!

3D printing technology utilizes a broad range of materials to print objects such as plastic, glass, ceramic, metal, chocolate, and even living cells!

A team of researchers at MIT, is taking 3D printing to another level with 4D methods. This team used a stiff plastic that did not bend and another created by Stratasys, Edina, Minn., that could absorb water and double in volume when submerged. A shape that resembles MIT was printed and can turn into any shape that resembles the initials SAL.

4D printed parts can be used in home appliances, childcare products, clothing, and even for medical implants and cardiac stents!

More info: www.web.mit.edu

Contact Us

We hope you enjoyed this issue of our newsletter. Please write to us with your thoughts, comments, and article submissions at asmworc@asm-ma.org.