

ME-EM

Michigan Tech

eNewsBrief

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Greetings from William (Bill) Predebon, Chair, Department of Mechanical Engineering-Engineering Mechanics at Michigan Tech. For the latest news and info about our faculty, students and staff, please visit our website at www.mtu.edu/mechanical. Visit us on Facebook, [MEEM](#).

Upcoming Events

Join the ME-EM Department and Corporate Partnerships for our

Annual Alumni Reception



at the
SAE World Conference
Wednesday, April 17, 2012
5 p.m. to 9 p.m.
Room M2-29 of the Cobo Center,
1 Washington Blvd in Detroit, MI.

Meet with students as they discuss their designs for the national vehicle competitions. Dr. William (Bill) W. Predebon, Department Chair, will give an update on Mechanical Engineering's latest research, faculty, and student accomplishments.



ME-EM Department Chair Travel

When on travel for the Department, Dr. Predebon visits with alumni to get their feedback on our programs and their career and to give an update on the Department and University. Please let the Department know if you would be available for a visit when he is in your area. (906) 487-2911.

Dr. Predebon will be traveling to the following cities this coming spring:

- * April 14-17 - Detroit, MI, for the SAE World Congress
- * June 21- 23 - Indianapolis, IN for the ASME Annual Conference
- * June 23 - 26 - Atlanta, GA for the ASEE Annual Conference



The Department of Mechanical Engineering - Engineering Mechanics invites you to join in the celebration of its 85th year of delivering a world class mechanical engineering education to its students. Go to [85th anniversary](#) to see how you can participate.

Past Events



The Annual Winter Carnival ME-EM Alumni Hockey Social was held on Saturday, February 9th. More than fifty alumni and guests attended, enjoying good company, good food, and a good game. The Hockey Huskies beat Alaska Anchorage by a score of 6-1.

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Alumni Accomplishments & Awards

Paul Fernstrum (BSME '65) has been selected as the Alumni Association 2013 recipient of the Distinguished Alumni Award. The award will be presented on Friday, August 2, 2013 during the Alumni Reunion Dinner. The award recognizes alumni who have made outstanding contributions both in their careers and to Michigan Tech over a number of years. Paul is president of R. W. Fernstrum & Co. in Menominee, MI.



Paul Fernstrum (BSME '65), Sean Fernstrum (BSSTC '90) and Todd Fernstrum (AASTEM '92), the father and sons executive team at R. W. Fernstrum and Company were instrumental in the development of two state of the art high-tech classrooms in the ME-EM Department. The rooms were dedicated on February 22, 2013 and showcased to the University at the March First Friday Social held on March 1, 2013. Read the article at [Classroom](#).



Brett Chouinard (BSME '88) has been appointed to the ME-EM External Advi-

sory Board. He is currently the Chief Operating Officer at Altair Engineering in Troy, Michigan, a global engineering software and consulting company specializing in simulation and optimization technology. During his 20-year career at Altair, Brett has held a variety of technical and business roles, and is now responsible for worldwide business operations, including all sales, partner operations and technical support. Altair is leading the design engineering community in the development and use of simulation methods in mechanical computer-aided engineering (MCAE), particularly in the use of optimization algorithms in design, and Brett has had a prominent role in this success. His early work in academia and at Altair contributed to the creation and commercial adoption of technologies like OptiStruct for topology and composite laminate optimization, now used by thousands of manufacturing companies worldwide to create lightweight, efficient structures. According to his peers, Brett possesses a rare balance of technical ability and business acumen that has helped grow a small technology business from Detroit into one of the world's leaders in engineering design.



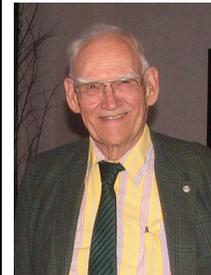
Michael Milosh (BSME '82) was highlighted in Michigan Tech News for his involvement in recovering the lost



treasure of the SS Central America that sunk off the coast of South Carolina in 1857. Mike joined the team as lead engineer to design, build and operate a new remote-operated vehicle and the special tools needed for the delicate recovery operation. Read the article at [Treasure](#)

Emeriti Professor Passes

Arthur Weaver (professor emeriti, ME-EM) passed away on Wednesday, March 6, 2013. Art taught in the ME-EM Department from 1958 through 1984. He was the recipient of the 1961 Distinguished Teaching Award and the 1984 ME-EM Teaching Award. His full obituary can be viewed at [Weaver](#).



Faculty and Student Invention Disclosures

Dr. Steven Goldsmith (research professor, ME-EM) filed the invention disclosure "Distributed Controller for Parallel DC Boost Converters".



Dr. L Brad King (professor, ME-EM) filed the invention disclosure "Spacecraft Thruster Based on Electrically Conducting Ferrofluid Propellant".

Current Contracts and

Ezra Bar Ziv (PI, ME-EM), "Feasibility of a Novel Concept to Produce Biocoal for Power and Enhanced Bio-Oil", sponsor: National Science Foundation, amount: \$69,750.



Dr. Seong-Young Lee (PI, ME-EM) and **Dr. Jeffrey Naber** and **Dr. Jaclyn John-**

son (co-PIs, ME-EM), "MTU-Nostrum (Phase III): Experimental Investigation of Hollow-Cone Injector at Engine Relevant Conditions in a Combustion Vessel", sponsor: Nostrum Energy, LLC, amount: \$19,600.



Jeffrey Naber (PI, ME-EM), **Paul Dice** and **Gregory Odegard** (co-PIs, ME-EM); "Titan Tire Testing TP72 (5 Tires) and TP73 (4 Tires)"; sponsor: Titan Tire Corporation, amount: \$27,315.

Jeffrey Naber (PI, ME-EM) and **Bo Chen** (co-PI, ME-EM); "Continued Research - Spring 2013"; sponsor: Nostrum Energy, LLC, amount: \$53,000.



Gregory Odegard (PI, ME-EM), "Multiscale Modeling of Graphite/CNT/Epoxy Hybrid Composites", sponsor: US Department of Defense, AFOSR, amount: \$252,555.

Faculty/Staff Awards/ Accomplishments

A paper by **Dr. Mahesh Gupta** (professor, ME-EM), **Atakan Altinkaynak** (MEEM PhD '2010), M Spalding (Dow), and S Crabtree (Dow), "Melting in a single Screw Extruder: Experiment and 3D Finite Element Simulations", was the second most read paper in the International Polymer Processing Journal. Read the summary at [Paper](#).



Dr. Ezra Bar Ziv (professor, ME-EM), Dr. John Diebel (assistant director, Technical Commercialization) and **Jordan Klinger** (PhD candidate, ME-EM) were members of a team that was awarded the top team designation by the NSF Innovation Corps (I-Corps), a new public-private partnership to help

develop scientific and engineering discoveries into useful technologies. The program connects academic researchers with the technological, entrepreneurial, and business communities.



Dr. Mahesh Gupta (professor, ME-EM) has been elected a Fellow for the Society of Plastics Engineers (SPE). He is the first faculty member from Michigan Tech to be named a Fellow of SPE.



William Langdon (senior design Training specialist, ME-EM) received the Innovative Solutions Award, at the Michigan Tech Making a Difference ceremony held on Wednesday, January 9, 2013.

Dr. Scott Miers (assistant professor, ME-EM) and **Dr. Kazuya Tajiri** (assistant professor, ME-EM) have been selected as a finalists for the Michigan Tech Annual Teaching Award in the Assistant Professor/Lecturer/Professor of Practice category. The selections were based on over 51,000 student rating-of-instruction forms.



Dr. Reza Shahbazian Yassar (associate professor, ME-EM) was selected as a panelist at the Rush University Mentoring Program seminar. The seminar, "Tips on Getting NSF Funding: Panel presentation from NSF Awardees", was held on February 21, 2013.



University News/Awards

The Michigan Tech Career Fair held on February 19, 2013, was featured on CBS Detroit. With 229 employers on campus, it was the largest Career Fair ever, over 2,000 interviews were scheduled. This set a record with more than a foot of snow in less than 24 hours and Michigan Tech cancelling classes and closing offices for the day. Read the article at [Career](#).



Michigan Tech hosted its annual Day of Challenges for 5th through 12 grade students, Saturday, Feb. 23rd. The event is sponsored by the Michigan Veterans of Foreign Wars and the Michigan Tech Army and Air Force ROTC programs and focuses on teamwork and mental and physical challenges, with events such as an obstacle course, a leadership reaction course and tests of swimming ability, all the while encouraging participants to learn and have fun.

The latest US News & World Report graduate school rankings place Michigan Tech's graduate engineering programs overall in the top 100 nationwide. The magazine's latest rankings list Michigan Tech's College of Engineering graduate programs at 89th. The ME-EM Department ranking was 49th, an eight way tie with Lehigh, Drexel, Northeastern, Pittsburgh, Delaware, Arizona, and Dartmouth.



Michigan Tech has produced a video highlighting its 2012 accomplishment. See the video at [Video](#)



Michigan Tech Society of Women Engineers (SWE) has won the bid to host the 2014 SWE Region H Conference to be held Feb. 14 -16, 2014. Region H is the largest region in the nation, with more than 2,800 member from Illinois, Indiana, Iowa, Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin. The conference is expected to attract 700 or more SWE members, including undergraduates, graduate students, faculty, staff, and corporate representa-

tives. The theme of the conference, which is being planned by Tech's SWE chapter, is "Extracting the Elements". The Conference Bid Chair and Conference co-chair is Kerstin Cleveland (Chem E) who is also the American Society for Engineering Education President and representative on the ME-EM Student Advisory Committee.

Student Accomplishments and Awards

Qi Gao (PhD candidate, ME-EM) was the recipient of a Fall 2012 finishing fellowship.

**Please Join Us
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SAE World Conference
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CAPSTONE CORNER

Senior Capstone Design Day approaching...

April is always a great time to visit Tech. On Tuesday, 23 April, sixteen Capstone teams will be presenting results stemming from their body of work begun last fall. They will be demonstrating prototypes of product improvements, new product designs, and manufacturing process improvements. We would suggest coming to see first-hand what Michigan Tech engineers can accomplish!

As these projects are drawing to their conclusion, we are beginning to plan for new projects that will begin this coming September. As this newsletter goes to press, we are beginning to fill slots for 18-20 projects slated for the fall. If you are curious what could be accomplished for your organization through Capstone, please contact us in the coming months.

Bob De Jonge
rdejonge@mtu.edu
906-487-2142



Student Competitions and Team Awards



Photo reprinted with permission of Sarah Sork, Michigan Tech Photographer

Twenty two universities with more than 50 vehicles came to Michigan Tech to compete in the annual Winter Baja competition on Saturday February 16, 2013. Northern Michigan University took first place, Michigan Tech's car # 9 placed fourth and car #74 placed 9th. The Baja advisor is Dr. Brett Hamlin (sr. lecturer and asst. dept. chair, Eng. Fund.) See the videos and article links at [Baja](#)



ME-EM, in conjunction with the Keweenaw Research Center, hosted the 14th annual SAE Clean Snowmobile Challenge (CSC), March 4 -9. Fifteen universities from across the nation competed in the Internal Combustion (IC) engine category and five in the Zero Emissions,

(ZE) electric category. The University of Wisconsin-Madison took first place in the IC category, and McGill University took top honors in the ZE section. Michigan Tech placed 3rd overall in the ZE category, 6th overall in the IC category, won the Polaris Industries Award for Best Handling (IC and ZE combined) and the Land and Sea Award for Best Performance. They were also one of only six sleds to make it to the finish line in the Endurance Run, a 100-mile test of reliability. The CSC Enterprise advisor is Dr. Jason Blough (associate professor, ME-EM). Videos of the event can be viewed at [Challenge](#). The event was highlighted on the CBS Detroit web sight [Snowmobile](#)



MEEM International Senior Design teams 7 traveled to India to discuss their progress and receive feedback on their research the week of March 12, 2013. Team 7 met Dr. Anil Jain of the Dr. P.K. Sethi Rehabilitation and Jaipur Limb Training Center.

The main goal of the trip was to gain a better understanding of the process used in India to fabricate the Jaipur foot and to communicate the current status of the project to Dr. Jain. Also, several prototypes were delivered. Team 8 is redesigning and evaluating a cost optimized prosthetic knee joint created by a previous senior design team. The joint must be manufactured in India with local materials and be affordable for the hospital and patients. Current solutions to knee replacement are expensive or ineffective. The team has worked to develop a design that is lightweight, low-cost, and easy to use. The design incorporates a 3-bar linkage system between the upper and lower frames of the device as well as an adjustable damping pad to provide a variable resistance of the swing of the knee which can be tailored to each patient. Team 7 members are seniors Reid Barber, mechanical engineering and Stephanie Boomgaard, Ben Cottrill, Miriam Paquet, and Kevin Peterson, biomedical engineering. Team 8 members are seniors James Hartel, mechanical engineering, and Ruth Eischer, Bobby Pizzey, David Weyland, biomedical engineering. The advisors for both teams are Dr. Nina Mahmoudian (assistant professor, ME-EM) and Dr. Mohammad Shahbakhti (assistant professor, ME-EM). Read the Tech Today article [India](#)