ME-EM eNewsBrief, March 2012

Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University

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Greetings from William (Bill) W. Predebon, Chair, Department of Mechanical Engineering-Engineering Mechanics. For the latest news and information about our faculty, students, and staff please visit our web site at http://www.me.mtu.edu/.

MECHANICAL ENGINEERING GRADUATE PROGRAM RISES IN RANKINGS

Michigan Tech’s Department of Mechanical Engineering-Engineering Mechanics jumped from 48th to 44th in the US News & World Report rankings published in “America’s Best Graduate Schools” just in time for their 85th Anniversary. As the Department celebrates 85 years of education, innovation, and invention; the increase ranking reinforces the strides made to be a continuing force in Mechanical Engineering at a national and international level. Read the article at: http://blogs.mtu.edu/mechanical/2012/03/15/mechanical-engineering-graduate-program-rises-in-rankings/

Upcoming Events

The ME-EM Department and Michigan Tech’s Corporate Development will again co-host the Annual Michigan Tech/MEEM Reception at the SAE International Conference in Detroit, MI. The reception is Wednesday, April 25th from 5:00 p.m. to 8:30 p.m. in room O3-46 of Cobo Center. Refreshments will be served. We have an exiting agenda planned for this year. Students from the SAE Student Chapter at Michigan will be there with competition vehicles. Door prizes will be given out. Come spend an evening with our students, hear about their competitions, see their vehicles, and hear what is happening on campus.

Mark your calendars and plan to visit your alma mater for Alumni Reunion August 2-4, 2012. It’s the 110th anniversary of the Michigan Tech Alumni Association and preparations are underway to make this the biggest reunion ever! The 2012 Reunion will be the first ever to celebrate the women of Michigan Tech. All female graduates, former students, faculty and staff are invited to a number of special events during Reunion including a Saturday evening “Girls Night Out” party hosted by the Presidential Council of Alumnae. Visit www.mtu.edu/reunion for more details.

Alumni and Friends News, Accomplishments, & Awards

It is my intent to highlight alumni accomplishments on a regular basis. I would like to hear from you about your accomplishments and those of other Michigan Tech ME-EM alumni who have achieved recognition. Please email me this information at wwpreddeb@mtu.edu or Kathy at kagoulet@mtu.edu.

Pamela Klyn (BSME ’93, MSME ’95) was highlighted in the Wall Street Journal, Fining Their Way to the Fast Track”, January 19, 2012. Pam is the general manager for Whirlpool Corporation’s cooking products in North America. She made cost-cutting a goal for thousands of the company’s white-collar workers using a novel approach that resulted in unexpected benefits to Whirlpool. Read the article at: http://online.wsj.com/article/SB10001424052970204555904577169174294262182.html
MEEM 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.

- Week of April 22nd—Detroit for the SAE International Conference
- April 24th—Washington DC with the HEV Mobile Lab
- Week of June 3rd—Montreal Quebec for the ASME Conference
- Week of June 10th—San Antonio TX for the ASEE Conference

Department Accomplishments
The MEEM 2011 Annual Report is hot off the presses. It has been mailed out to alumni, if you have not received yours and would like a copy; please email Kathy at kagoulet@mtu.edu with your name and address. Send us your feedback on the publication. We like to hear your comments and ideas. To view the publication, please go to: http://issuu.com/michigantech/docs/meem_ar_20120210_for_reference-2/3.

We have a new look. Come see us at: http://www.mtu.edu/mechanical/. Let us know what you think, send your feedback to Dr. Bill Predebon at wppre-deb@mtu.edu.

The MEEM has been featured in the publication on U.S. Air Force Materiel Command 20 Years of Warfighter Support, 1992-2012. We have a short ad on page 140 describing our undergraduate mechanical engineering program, with particular emphasis on the First Place winner of the 2011AFRL University Nanosatellite Competition and our Technology Lead in the Michigan/AFRL/AFOSR Center of Excellence in Electric Space Propulsion.

Current Contracts and Grants
Jeffrey Naber (PI, ME-EM), Seong-Young Lee (co-PI, ME-EM), Jaclyn Johnson (co-PI, ME-EM), Christopher Hutton (co-PI, ME-EM), "Ford Experimental Study Low Temperature Fuel Mixture Ignitability", Sponsor - Ford Motor Co., total project amount - $97,248.

Bo Chen (PI, ME-EM) and Jeffrey Naber (co-PI, ME-EM), "Engine Studies", Nostrum, total project amount - $42,754.

Jeffrey Naber (PI, ME-EM) and Seong-Young Lee (co-PI, ME-EM), and Jaclyn Johnson (co-PI, ME-EM), "Rate of Injection Measurements - Comparison of Injector Nozzles/Injectors", sponsor: Ford Motor Company, total project amount: $16,857.

John Beard (associate professor, ME-EM), Jeff Burl (associate professor, ECE), Ali Ebnenasir (assistant professor, Computer Science), Stephen Hackney (professor, MSE), and Bob Page.

On March 2, 2012, the research "Nanocomposite study explores link between macro- and nanoscale behaviour" was highlighted on the nanotechweb.org website. The collaboration involves researchers from the Department of Mechanical Engineering–Engineering Mechanics at Michigan Technological University, and the department of Wood Science and Engineering at Oregon State University. Read the article at: http://nanotechweb.org/cws/article/lab/48820.

The Mechanical Engineering-Engineering Mechanics Department and the Electrical and Computer Engineering Department have merged two ongoing student Enterprises: the Eco Car Enterprise in the Mechanical Engineering—Engineering Mechanics Department, and the Automotive Computing Enterprise in the Computer Engineering Department. The two Enterprises have merged into the Hybrid Electric Vehicle Enterprise. It will have as its focus the student design competition that is the follow-up to the well-known Eco-Car Challenge. Such a partnership will benefit not only the students but also the state economy, as the students graduate and begin careers in industry. An oversight committee of GM staff and faculty and staff from both departments will work with the Enterprise students. Bob Page (manager of laboratory facilities, ME-EM) and John Lukowski (associate professor, ECE), will serve as co-coordinators. The advisors are Jeffrey Naber (PI, ME-EM), Christopher Hutton (co-PI, ME-EM), and Jeff Burl (associate professor, ECE).

On February 18, 2012, an episode of HorsePower TV aired on Spike TV that featured researchers from the Department of Mechanical Engineering–Engineering Mechanics at Michigan Technological University. The episode was also highlighted on the nanotechweb.org website. The collaboration involves researchers from the Department of Mechanical Engineering–Engineering Mechanics at Michigan Technological University, and the department of Wood Science and Engineering at Oregon State University. Read the article at: http://nanotechweb.org/cws/article/lab/48820.

The Advanced Power Systems Research Center (APSRC) was featured in an episode of HorsePower TV on Spike TV that aired on February 18, 2012, concerning testing engines running on E85 fuels and the E3 spark plug. Jeremy Worm was interviewed regarding the APSRC’s research. The interview begins at about 13.5 minutes into the clip. See a video of that episode at: http://www.powerblocktv.com/player/show_player.php?ep_show=HP&ep_num=HP2011-17.
The spirit of innovation is key to thriving in today's competitive market. Those companies that strive to stay on the cutting edge of their industry during economic downturns will be ready to surge ahead when the economy recovers. But how do you accomplish this when the cost of everything from labor to transportation is rising faster than revenue and your resources are limited? Many savvy companies have turned to the ME-EM’s Senior Capstone Design Program and ready to view the results. As we get ready to close out the Spring 2012 semester, seventeen teams, sponsored by companies like Cummins, John Deere, Caterpillar, Chrysler, Jost, Kohler, and Gentex, are preparing to present their final designs on Senior Design Day, Tuesday, April 17.

These teams, made up of students from the MEEM, EE, biomedical engineering, and materials science, have worked hard to develop innovate solutions to problems as diverse as detecting leaks in pressurized systems to effectively testing for squeaks in rearview mirrors. In addition, two teams have recently returned from a successful trip to India where they presented their designs for an inexpensive prosthetic knee joint and an optimized version of the Jaipur foot. SCD Director Dr. Bill Endres said this year’s teams have been especially impressive. “We are seeing some spectacular results from the students efforts, with a few designs on track for patent application.”

### Student Competitions and Team Awards

The Women in ASME (WASME) at Michigan Tech participated in a visit sponsored by John Deere to its Product Engineering Center (PEC) in Cedar Falls, Iowa and its Tractor and Cab Assembly Operations (TCAO) facility in Waterloo, Iowa. The visit took place from March 1-3, 2012 with eight mechanical engineering undergraduates, an electrical engineering graduate student and the WASME advisor taking part. The trip was fully funded by John Deere and was arranged by Michigan Tech alumni Kirby Baumgard (ME-EM External Advisory Board) and Sue Ilax (BSME ‘77) at the PEC.

ME-EM along with the Keweenaw Research Center at Michigan Tech hosted the SAE Clean Snowmobile Challenge the week of March 4, 2012. The event attracted a visitor from Austria. Johannes Haas, representing a group of scientists in Graz, Austria who are interested in making snowmobiles quieter and cleaner attended the event. This was the second year our team completed in both categories. In the internal combustion category our team placed 5th overall, including 2nd in Objective Handling and tied for 2nd in Best Performance. In the electric (zero emissions) category our team placed 3rd. The faculty advisor is Dr. Jason Blough (associate professor, ME-EM). SAE featured the event in their SAE International Update publication. Read the article at: [http://www.nxtbook.com/nxtbooks/sae/12UPDD0412/?p=a selector=3531434143313033254335363238443635632323343413035354131&start=12&l=1:33453082423635463843243363433241394546413844363434364234/#/12](http://www.nxtbook.com/nxtbooks/sae/12UPDD0412/?p=a selector=3531434143313033254335363238443635632323343413035354131&start=12&l=1:33453082423635463843243363433241394546413844363434364234/#/12)

Both the men's and women's cross country teams were named scholar teams by the United States Track and Field and Cross Country Coaches Association. The men’s team posted a team cumulative grade point average of 3.29 and was one of eight teams from the GLIAC honored. The women’s team posted a grade point average of 3.48 and was one of 11 conference teams to earn the award.

Our two senior design project teams, who spent the Spring break in India, presenting their designs and were getting feedback for incorporation in their final design were featured in two India news articles: Read the articles at: [http://www.thehindu.com/todays-paper/tp-national/article2965082.ece](http://www.thehindu.com/todays-paper/tp-national/article2965082.ece) and [http://www.gktoday.in/an-american-facelift-for-the-jaipur-foot/](http://www.gktoday.in/an-american-facelift-for-the-jaipur-foot/).

The men's and women's basketball teams recently had 10 student-athletes earn GLIAC Academic Excellence and eight players earn All-Academic accolades. Student-athletes must have a grade point average of 3.5 or higher to earn academic excellence honors and a grade point average of 3.0 or higher for All-Academic accolades. Student-athletes cannot be freshman or first-year transfers.

The Michigan Tech SAE Collegiate Branch has been selected to receive the Class 1 2011 SAE Honeywell Outstanding Collegiate Branch Award. The award recognizes SAE collegiate Branches for exemplary performance in the areas of technical meetings, networking opportunities, Collegiate Design Series competitions, promoting SAE membership, and community service programs like "A World in Motion". The award comes with a $1,000 check and a framed certificate. It will be presented at the SAE 2012 World Congress on April 25, 2012 in Cobo Center, Detroit, MI. Dr. Jason Blough (associate professor, ME-EM) is their advisor.

Michigan Tech again hosted the Winter Baja race in Lake Linden on February 18, 2012. A record setting 48 vehicles from 20 universities participated in the 4 hour race. The Michigan Tech team finished 7th overall. View a video of the event at: [http://www.youtube.com/watch?v=NxOSVcLW78o](http://www.youtube.com/watch?v=NxOSVcLW78o).
Faculty/Staff Awards

Dr. Ezra Bar-Ziv (professor, ME-EM) received the 2012 Russell Ackoff Award for his paper "Torrefied-Biomass (Biocoal) from Municipal Solid Waste for Power Production" in the Journal of Solid Waste Technology and Management at the Twenty-Seventh International Conference on Solid Waste Technology and Management on March 11-14, 2012 in Philadelphia, PA.

Dr. Jason R. Blough (associate professor, ME-EM) has been selected to receive the 2011 SAE Faculty Advisor Award. The award recognizes dedication and contributions to SAE and your Collegiate Chapter. The award will be presented at the SAE 2012 World Congress and Exhibition on April 25, 2012 in the Cobo Center.

Dr. John Hill (assistant professor, ME-EM) is one of four Michigan Tech faculty members that make up the Michigan Technological University’s Rail Transportation Program. The Rail Transportation Program is one of seven members of a research university consortium that has received the US Department of Transportation’s (USDOT) first multi-million dollar grant to a University Transportation Center focused solely on rail transportation. The University of Illinois at Urbana-Champaign (UIUC) will lead the consortium. The program is a part of the Michigan Tech Transportation Institute. Read the whole article at: http://www.mtu.edu/news/stories/2012/february/story62206.html.

Drs. Desheng Meng (assistant professor, ME-EM), Amitabh Narain (professor, ME-EM), Xiaobao Geng (PhD student, ME-EM) and Pragnesh Patel had their article "A self-adaptive thermal switch array for rapid temperature stabilization under various thermal power inputs" selected for publication in the Journal of Micromechanics and Microengineering’s "Highlights of 2011". Only 24 of the 403 published in 2011 were selected.

Dr. Scott A Miers (assistant professor, ME-EM) has been selected to receive the 2012 Society of Automotive Engineers (SAE) Ralph R. Teetor Educational Award. In the award letter it states "The credentials and standards of excellence in education of this year's candidates were extremely keen high and brought about some very keen competition. Your outstanding contributions have distinguished you as one of the top engineering educators." He will receive the award at the 2012 SAE World Congress which begins on April 24th in Detroit, MI.

Staff Council announced the Make a Difference Award recipients at an awards luncheon held on Tuesday, January 10, 2012. Twenty-six employees were nominated for the seven awards. Jillian Spagnotti (office assistant, ME-EM) received the Rookie Award. The award recognizes staff members who have been at Michigan Tech for two or less years and have made a significant contribution.

Dr. Reza Shahbabian Yassar has been selected by the NSF-International Materials Institute at Northwestern to give an invited talk at the International Conference of Young Researchers on Advanced Materials in Singapore July 1-6, 2012. The International Materials Institute for Solar Energy and Environment has awarded him a travel grant to support his trip.

Student Accomplishments and Awards

AsfalisMed, a company developed by Joel Florek (fr., ME-EM) and Travis Beaulieu (sr., applied physics) was one of 20 companies selected to compete in the Intel Innovators competition. The company was selected out of hundreds of applications by faculty and department heads from Harvard, Princeton, John Hopkins, and Carnegie Mellon universities. After voting on Facebook, the company advanced to compete in the final 5 of the second round of the competition. The first place award was $100,000. AsfalisMed is a medical service idea that in the future would implement “quick response” or “QR” code technology to help access patient information in an emergency situation. The plan is to develop a smart phone application that would have the capability to take a photo of any form of identification, like a QR code does, that has the patients name on it. See their presentation at the final five at: http://www.youtube.com/watch?v=uCv8-IS3OGs.

Sarah Daniels (jr., ME-EM) was one of four Tech women to be recognized by the United States Track and Field and Cross Country Coaches Association with the Division II Cross Country All-Academic honor. To earn the award a student-athlete must have a 3.25 cumulative grade point average and finish in the top-50 percent at the NCAA National Championships or the top-30 percent at the NCAA Regional Championships.

Michael Hojnacki (sr., ME-EM) was named to the Academic All-District IV College Division First Team. Mike ranked 25th in the league in scoring, averaging 12.0 points per game. The 6-7 forward ranks fifth in 3-point shooting percentage (.536) and 11th in field goal percentage (.536).

Mark Hopkins (PhD student, ME-EM) was one of four graduate students who went to Lansing for Graduate Education Day on Thursday, March 29. Governor Rick Snyder declared the week of March 26 as Graduate Education Week and more than 50 students from universities and colleges across the state met with legislators at the Capitol Building in Lansing. Mark will be discussing his work on in-space electric rockets.

Brett Jenkins (sr., ME-EM) was highlighted in the Michigan Tech Lode's article about National Engineering (continued)
### Student Accomplishments and Awards Continued

Week on the Michigan Tech campus. The event was kicked off at the ME-EM hosted 2012 Winter Baja Competition on February 18th and included a week of engineering related activities. Read the article at: [http://www.mtuoday.com/news/2012/02/28/national-engineering-week-awareness/](http://www.mtuoday.com/news/2012/02/28/national-engineering-week-awareness/).

Ben Mitchell (PhD student, ME-EM) Wade Aitken-Palmer (MS student, ME-EM) won a New Venture Competition award for creating better bicycle components for rural Africans who depend on bicycles for their livelihood. Their idea, called Baisikeli Ugunduzi (Swahili for "modern bicycle"), captured a $30,000 first prize and another $10,000 for Best Social Venture, for its sustainability and social impact, among other criteria. The invention is a tube that eliminates flat tires. The New Venture Competition is a joint Central Michigan/Michigan Tech event. Locally, the competition is sponsored by the Michigan Tech Enterprise Corporation (MTEC) SmartZone, the Keweenaw Economic Development Alliance and the School of Business and Economics Entrepreneurs Club.

Nicholas Zochowski (jr., ME-EM and Biomed Eng) was quoted in Tech Today on February 27, 2012. Nicholas, a member of the Michigan Tech EMS Team commented on the new way to help transport injured skiers from the Upper Peninsula skiing and hiking trails in a more accelerated and efficient manner. This new operating system consists of a snowmobile and sled, which will hopefully enable the medical team to reach the skiers before they become more injured or reach a hypothermic condition. Read the whole story at: [http://www.admin.mtu.edu/urel/ttoday/previous.php?i=sue=20120227&utmsource=email&utmcontent=20120227](http://www.admin.mtu.edu/urel/ttoday/previous.php?i=sue=20120227&utmsource=email&utmcontent=20120227).

### University News/ Awards

Michigan Tech's chapter of the American Indian Science and Engineering Society hosted the 2012 AISES Region V Conference on April 13 and 14, 2012. The conference, "A Traditional Path into the Future", is geared towards making native students aware of the benefits of pursuing education in the STEM fields (science, technology, engineering and math), while maintaining their traditional values.


MTC Trekkers was one of 60 exhibitors at the Science Expo in Green Bay on January 14, 2012. Mind Trekkers is a traveling science show filled with hands-on activities that bring the WOW of science, technology, engineering and mathematics to life for school children. Mind Trekkers is a part of the Pre-college Outreach program. The Tech exhibits taught the children how to whip up ice cream in 60 seconds, using liquid nitrogen, to save a grape from getting smashed by a two-by-four, using only paper and a toothpick, and cheered them on as they raced Lego engines across a magnetic elevated track and invite them to step into their very own giant bubble. See the video at: [http://mind-trekkers-in-the-news.tumblr.com/](http://mind-trekkers-in-the-news.tumblr.com/)

Michigan Tech has been named a Military-Friendly University for the second year in a row by Military Advanced Education magazine. All colleges and universities were judged on degrees/programs offered, military support, financial support, and spouses' and dependents' support. Michigan Tech was cited for support features, such as dedicated admissions staff, an advisor for military personnel, (continued on next page) staff trained in military needs, having a veteran's organization, a liberal withdrawal policy and tuition discounts for dependents. Michigan Tech also participates in the Yellow Ribbon program, committing $2,500 in financial aid to a government-matched amount, and additional military scholarships.

President Glenn Mroz testified in Lansing before the Higher Education Subcommittee of the Michigan Senate Appropriations Committee. His testimony was part of a presentation by the Business Leaders for Michigan (BLM), an organization of CEOs from the state's largest employers, representing among them one-quarter of Michigan's gross domestic product. He urged the senators to support performance-based funding of state universities, stating that the metrics used to evaluate performance need to follow the more concrete recommendations that the BLM has recommended. Read the article at: [http://www.mtu.edu/news/stories/2012/february/story62966.html](http://www.mtu.edu/news/stories/2012/february/story62966.html)
Past Events

The ME-EM Annual Hockey Social again filled the Presidential Suite to the brim.

If you will be here for Winter Carnival next year, join us on Saturday night. More information will be out closer to the event.