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ME-EM eNewsBrief, September 2011

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Department of Mechanical Engineering—Engineering Mechanics



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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/>.

2012—Our 85th Anniversary Celebration Year

In 2012 we will be celebrating our 85th anniversary. The Mechanical Engineering professional degree program was officially started in 1927. Prior to 1927, mechanical engineering was only offered as a two year program. We are planning a number of activities for alumni and friends throughout 2012. Please be on the alert for celebration events starting with our 2011 ME-EM Annual Report which will be our 85th anniversary report.

Upcoming Events

The 12th Annual **ME-EM Alumni Winter Carnival Hockey Social** will be held on Saturday, February 11, 2011 during the Michigan Tech versus Nebraska Omaha (Winter Carnival) game in the MacInnes Presidential Skybox of the Student Development Complex (SDC). The game has a 5:07 PM start time. Join us in the newly renovated SDC suites. Admittance is free for ME alumni and their guest and munchies and drinks will be provided. Complimentary tickets are required this year so please RSVP to Kathy at kagoulet@mtu.edu or 906-487-2911 to reserve yours. Please RSVP early. The complimentary tickets will be held at the will call window for pick up.



Past Events

One hundred thirty alumni, their families, friends, faculty, and staff enjoyed the annual ME-EM boat cruise on the Portage Canal during the 2011 Alumni Reunion on August 4th. The weather was perfect. If you plan on being in the area during the 2012 Alumni Reunion please consider joining us on Thursday, August 2nd for the ME-EM Alumni cruise. More information will be forthcoming.



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. Call (906) 487-2911 or email kagoulet@mtu.edu.

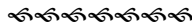
The week of November 14th Dr. Predebon will travel to the Denver area to attend the ASME 2011 International Mechanical Engineering Congress & Exposition.

Presidential Council of Alumnae (PCA) ME-EM Inductees

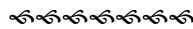
The Michigan Tech PCA held its induction on Sept. 15-17, 2011. Inductees are recognized for achievements in a number of areas, such as education, professional achievements, past service as a student or currently in their community, support for the University, and personal achievements. The PCA advises the President on campus climate issues and provides suggestions for enhancing the University's environment for all students. The PCA members assist the President by identifying programs and activities that will benefit Michigan Tech. PCA works with the Office of Institutional Diversity, the Advancement area, and the academic departments to help implement their ideas, and support the University's strategic plan. Current inductees from ME-EM are:



Margaret Cobb (BSME '83) currently serves as Director of OEM Product Marketing – leading a team marketing Microsoft products for PC manufacturers Worldwide. She began her career in programming during a summer internship at Scott Paper in Marinette, Wisconsin, where she was given the opportunity to program code used for monitoring paper machines. Upon graduation she joined Wisconsin Electric Power where she worked on Supervisory Control and Data Acquisition (SCADA) systems monitoring power grids. She later worked at Snohomish County Public Utility District monitoring a hydro-electric plant, dam, and the electric grid for the area; was Product Manager at Systems Northwest (SNW); sold flight data recorders to the US Army for Sundstrand Data Control; was a Marketing Representative for Apple Computer before beginning her career at Microsoft. She has worked for Microsoft in multiple positions including Director of Xbox Live Product Management, managing the Windows 7 and Internet Explorer Marketing launches. She resides in Woodinville, Washington with her family.



Colleen L. Jones-Cervantes (BSME '83) currently serves as Vice President, Product Supply & Trading and has global responsibility for the supply of non-crude oil feed stocks to Chevron's refining system, refined products supply and trading, marine fuels marketing, and biofuels supply and trading. Colleen has worked her entire career at Chevron starting as a Project Engineer and has progressed through a variety of assignments in Chevron's Marketing business, product supply operations, asset management, lubricants and retail functions. Prior to her current role she was Vice President – Global Marketing, Asia Pacific region, where she led retail sales and operations for the Caltex TM brand, commercial and industrial fuel sales, terminal operations, marketing logistics and asphalt operations throughout the eleven country area. Her varied assignments have required eleven relocations, including two international assignments. While in Asia, Colleen also served on the Board of Directors for Caltex Australia Ltd, the largest refining and marketing company in Australia. She has a keen interest and passion for developing young professionals. She spends a great deal of time mentoring employees new to Chevron. She is actively involved with employee networks and serves on the Advisory Board for the Hispanic employee network, and is a frequent speaker at the Women's network events. During her time in Asia, Colleen supported "Caring for Cambodia"; a charity focused on improving education and providing basic needs for school age children around Siem Reap, Cambodia. Colleen resides in the Houston, Texas area with her family.



Lee Ann Rouse (BSME '87) is President and CEO of Omni Tech International, Ltd. – a technical and business consulting firm headquartered in Midland. She began her career working for Dow Chemical as a Technical Service & Development Engineer in Dow Plastics then moved into Environmental, Health & Safety managing Dow's health promotion and health services functions. After ten years at Dow, Lee started her own consulting firm, On Track Training & Consulting which later merged with Cornerstone Consulting. In addition to managing the company, Lee works as a consultant in the quality and business arena, and has authored and facilitated many training courses. Lee has received several special recognition awards for her client and work efforts and several community leadership awards including the Athena Leadership Award, the Midland Chamber Director's Award, and the Vista award for Leadership. Under her direction, Omni Tech was named one of the 50 Best Companies to watch in Michigan and also received the Midland Innovator Award. In her community, Lee has served on the Board of Education for the Midland Public Schools for eight years, the Midland Center for the Arts Board of Directors, and the Hidden Harvest Board of Directors. She has been on the Board of Directors for the Midland Chamber, Rotary, and the American Heart Association. She is an active volunteer with the Midland High Cross Country and track programs and is also involved with youth and adult programs at her church. In her spare time she skates on a competitive ice skating team and is an avid stamper and scrapbooker. She resides in Midland, MI with her family.



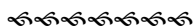
Alumni and Friends News, Accomplishments, & Awards

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 wwpredeb@mtu.edu or Kathy at kagoulet@mtu.edu.

Former Tech football player **Joe Berger (BSME '04)** was signed by the NFL's Minnesota Vikings on Monday, Sept. 12, 2011. Joe earned All-America First Team and Academic All-American First Team honors as a senior in 2004, helping the Huskies to their only NCAA playoff berth. Berger was twice named GLIAC Offensive Lineman of the Year.



On August 16, 2011, Governor Rick Snyder announced the appointment of **Ronald James "Jim" Federighe (BSME '62)** to the State of Michigan Board of Boiler Rules. The board is responsible for prescribing uniform rules for boilers while licensing and regulating boiler inspectors, installers and repairers. Jim is the President of Northern Boiler & Mechanical Contractors Inc in Muskegon MI.

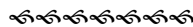


Cynthia Hodges (BSME '87, MSME '89) returned to campus to give the presentation "Transformers: Why the Auto Industry Needs Women Engineers" on Wednesday, Sept. 14, 2011. Cynthia and co-presenter Birgit Sorgenfrei (EE '91)

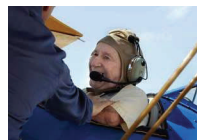
both work at Ford Motor Company. It was an insider view of what it's like to work on a product that people use every day and consider one of their most important purchases. (Women currently buy 52 percent of all new cars and influence more than 85 percent of car sales.)



Former men's tennis player **Steven Nykerk (BSME '93)** was inducted into the Michigan Tech Sports Hall of Fame on Saturday, October 8th.

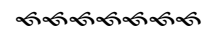


Richard E. Randolph (BSME '49) took a dream flight on board a 1940's Steadman biplane, the same type of plane he trained in to become a World War II pilot.

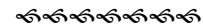


The flight over the Fox Valley was piloted by Darryl Fisher, founder of Ageless Aviation Dreams, who, with help from sponsors, offers flights to veterans like Randolph who have fought and served in foreign wars. Randolph stayed involved with the Experimental Aviation Association for more than 50 years.

Dr. Harold J. Schock (BSME '74, MSEM, Ph.D. MEEM '79), was recognized with a Distinguished Faculty Award at the Michigan State University's (MSU) February convocation. He is the director of the Energy & Automotive Research Laboratories at MSU.



David Strenski (MSME '90), had his work in solar energy highlighted in a YouTube video. See the video at: <http://www.youtube.com/watch?v=gK7lUK0711E>



Martha Sullivan (BSME '80), President & Chief Operating Officer at Sensata Technologies, Inc., was a guest speaker at the Michigan Tech Entrepreneur Forum 2.0 along with Michigan Tech alumni executives Dave House, Paul R. Fulton, Shankar Mukherjee, and John J. Rockwell. The executives also visited local companies, various departments on campus, and with Enterprise teams and other classes.

Department Accomplishments

The Michigan Tech **Mobile Lab** was open for preview on Tuesday, Aug. 30, on campus. The lab is operated by the **Advanced Powertrain Systems Research Center**. The



Mobile Lab includes a classroom, space for bench-top experiments and demonstrations, and two complete powertrain hardware-in-the-loop test cells, which operate as if they were in a vehicle on the road. The mobile lab has also been highlighted on Tailgatefan.com: <http://>

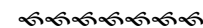
detroit.cbslocal.com/2011/10/02/tech-tour-day-two-michigan-techs-magnificent/



General Motors donated an all new hybrid-electric Chevy Volt to Michigan Tech's Advanced Power Systems Research Center on Saturday, August 6th for future research and education. Students will use the car for research to develop better understanding of hybrid-electric vehicles. **Terry Woychowski (BSME '78)** presented the vehicle to University President Glenn Mroz. Woychowski stated "The confidence and



trust we have and the need that we have to grow engineers and scientists who are well-versed in this and who can come into the industry highly-effective, day one, they can land running and help us take this technology to the next level, and it's done right here."



The Departments of Mechanical Engineering - Engineering Mechanics and Physics at Michigan Tech are featured in the USA Today Special Edition on the "End of an Era: Exploring the Space Shuttle's 30 Years and 135 Missions" published on August 15, 2011.

Faculty/Staff Awards Accomplishments

Drs. Jeffrey Allen (associate professor, ME-EM) and Mahesh Gupta (professor, ME-EM) and Jonathan Lee (MS student, ME-EM) had their paper "Observations of Liquid-Liquid Encapsulation in Coextrusion of Inelastic Newtonian Fluids" named Paper of the Month by the Society of Plastic Engineers.

Dr. John Johnson (research professor, ME-EM) was highlighted in the Detroit Free Press article "Online commentary: First heavy truck fuel rules environment, business" on September 13, 2011. Dr. Johnson commented on the first-ever regulations on fuel efficient and greenhouse gasses for medium- and heavy-duty vehicles. The article was a reprint from a

guest editorial in the Daily Mining Gazette on August 23, 2011.

Dr. Jeffrey Naber (professor, ME-EM) was one of three Michigan Tech faculty members working on research this summer with high school teachers through the NSF Research Experiences for Teachers program.

Dr. Sheryl Sorby has retired after more than 25 years as a faculty member at Michigan Tech. She began her teaching career as an instructor in the Department of Mechanical Engineering – Engineering Mechanics (ME-EM). After completing her PhD in Mechanical Engineering – Engineering Mechanics she accepted a full time faculty position in the Department of Civil and Environmental Engineering. She served the College of Engi-

neering as Department Chair of Engineering Fundamentals and as an Associate Dean for Academic Programs. In 2007 she took a leave to serve as Program Director, Division of Undergraduate Education at the National Science Foundation. Upon her return to Michigan Tech in 2009, she rejoined the faculty in ME-EM and accepted the directorship of ME-EM's Engineering Education Innovation Research Group (EEI). She will continue to serve ME-EM and the University as an Adjunct Professor and a Professor Emerita.

Dr. Song-Lin (Jason) Yang (professor, ME-EM) has been elected to the grade of Fellow of the American Society of Mechanical Engineers (ASME). The ASME Fellow grade of membership recognizes exceptional achievements and contributions to the engineering profession.

University News/ Awards



Enrollment is up at Michigan Tech. Data reported to the State Budget Office on Wednesday, Sept. 7, show total enrollment at 7,031, a 1 percent increase over fall 2010's official figure of 6,976. Female enrollment is up for the sixth straight year to an all-time high of 1,837, or 26.1 percent of the student body. Graduate enrollment increased approximately 5 percent, with a record 1,303 students seeking master's and PhD degrees, up from 1,256 in fall 2010. Distance learning is up markedly, from 58 to 106. Undergraduate enrollment is up as well, with 5,728 students compared to last year's 5,720. The number of new first-year students grew from 1,115 to 1,161, an increase of approximately 4 percent. The freshman class will also include more women: 288 as compared to 273 in 2010. First year women enrolled in mechanical engineering is up 39% from

last year. In addition, the academic credentials of the entering freshman class are up for the sixth straight year, with a record-setting average ACT composite score of 26.4, compared to last year's 26.1. The enrollment count also reflects the fact that more students are staying at the University. The retention rate from undergraduates' first to second year of study has risen to 83.3 percent, approximately 2.5 percent higher than 2010's 80.9 percent.

Over 225 high school students from nearly 15 states attended the Pre-College Outreach the week of June 26th. One hundred and fifty participated in the Engineering Scholars Program, a competitive co-ed engineering scholarship program.

The Princeton Review has listed Michigan Tech as one of the best universities in the Midwest. It is one of 153 institutions recommended in the "Best in the Midwest" section of the "2012 Best Colleges: Region by Region," on the Princeton Review website. The Princeton Review asks students

to rate their own schools on several issues—from the accessibility of their professors to quality of the campus food—and answer questions about themselves, their fellow students, and their campus life. Comments from surveyed students are quoted in the university profiles on the Princeton Review site. Michigan Tech also appears again in the Princeton Review's "The Best 376 Colleges: 2012 Edition." The Princeton Review is headquartered in Framingham, MA, and has editorial offices in New York City and test preparation locations across the country.

Michigan Tech was ranked 115 among the top universities in the nation in US News & World Report's 2012 edition of "Best Colleges." In addition, Tech was included among the "A-Plus Schools for B Students," a category comprising top-quality universities that also admit a significant proportion of students with ACT scores between 20 and 30.

Current Contracts and Grants

Jason Blough (PI, ME-EM), Carl Anderson (co-PI, ME-EM), Mark Johnson (co-PI, SOT); “Characterization of Torque Converter Cavitation Level During Speed Ratio Operation”; sponsor: General Motors Corporation; total award amount: \$102,057.

Jason Blough (PI, ME-EM), Jeremy Worm (co-PI, ME-EM); “Engine Sensor Testing”; sponsor: PCB Piezotronics, Inc.; total award amount: \$12,547.

Tammy L. Haut Donahue (PI, ME-EM), “A New Experimental Model of Knee Joint Trauma”, sponsor: National Institutes of Health, total award amount: \$207,686.

Desheng Meng (PI, ME-EM), “Scalable Fabrication of Fractal Nanoparticles for Electrochemical Energy Storage”, sponsor: National Science Foundation, total award amount: \$352,650.

Jeffrey Naber (PI, ME-EM), “Diesel Engine Studies - Investigation on 1.9L I4 for Combustion and Efficiency Baseline and Characterization”, sponsor: Nostrum Energy, LLC, total award amount: \$8,845.

Jeffrey Naber (PI, ME-EM), Bo Chen (co-PI, ME-EM); “IC Engine Test Stage V”, sponsor: Nostrum Energy, LLC, total award amount: \$42,088.

Reza Shahbazian Yassar (PI, ME-EM), Gregory Odegard (co-PI, ME-EM); “Collaborative Research: Stronger Than Glass Fibers, Stiffer Than Steel Wires: A New Perspective into the Mechanics of Cellulose”, sponsor: National Science Foundation, total award amount: \$277,650.

Reza Shahbazian Yassar (PI, ME-EM), “New Insights on High Performance Anodes for Lithium-Ion Batteries”, sponsor: American Chemical Society - Petroleum Research Fund, total award amount: \$154,000.

Kazuya Tajiri (PI, ME-EM), “Water Management in Unitized Regenerative Fuel Cells”, sponsor: University of Michigan - Michigan Space Grant Consortium, total award amount: \$15,400.

New Staff



Eddy Trinklein joins the Department of Mechanical Engineering-Engineering Mechanics as a research engineer. Previously, Eddy was a design engineer for Key Design. He earned a bachelor's degree in mechanical engineering and is finishing a master's in mechanical engineering this summer. He lives in Houghton.

William (Bill) Langdon joins the Department of Mechanical Engineering-Engineering Mechanics as a Senior Design training specialist. Bill was previously employed as an engineering tech at PCI Inc., in Lake Linden, MI and was self employed as a contract machinist. Bill has a certificate in machining from the Genesee Area Skill Center.



COME JOIN THE FUN

Don't forget to RSVP to Kathy at kagoulet@mtu.edu or 906-487-2911

to reserve your space at the annual ME-EM Hockey Social on February 11, 2012 at 5:07 p.m. in the MacInnes Presidential Skybox of the Student Development Complex (SDC).



Faculty and Student Invention Disclosures

Dr. Ezra Bar Ziv (professor, ME-EM) has filed the invention disclosure "Compaction of torrefied-biomass (biocoal for simplicity)".

Drs. Craig Friedrich (professor, ME-EM) and Tolou Shokuhfar (post doc, ME-EM) have filed the invention disclosure "Method for fabrication of titania nanotubes with integrated antimicrobial silver for implants".

Dr. Craig Friedrich (professor, ME-EM), Karl Walczak (post doc, ME-EM), Joseph Dingeldein (Ph.D. student, ME-EM) along with Paul Bergstrom (associate professor, ECE), Michael Roggemann (professor, ECE), Thomas Daunais (Ph.D. student, EE), and Christopher Middlebrook (so., ECM) have filed an invention disclosure "High speed optical interconnect assembly".

Dr. Dennis Meng and Xiaobao Geng (Ph.D. student, ME-EM) have filed the invention disclosure, "A low-cost, high-aspect-ratio molding process for 3D microfabrication".

CAPSTONE

ORNER Eighteen new MEEM-based Senior Capstone Design Projects kicked off this fall. These projects are now well into their ideation phases and we're seeing some tremendous creative approaches to these engineering challenges already!

One of these projects stems from our being chosen by the Air Force Research Labs as ***one of fifteen premier Capstone Design Programs in the country***. Michigan Tech will compete in this 3-year Capstone Design Challenge, with our initial team working on early design proposals at this very moment. Watch this space for updates on that competition.

Michigan Tech's Senior Capstone Design Program is now ***actively looking for industry customers*** for projects that will be starting in January 2012. If you can support this world-class engineering design program, and would like to be a part of this Capstone Experience, please contact us!

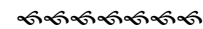
CAPSTONE
CORNER

Bob De Jonge

Student Accomplishments and Awards

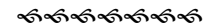
The following student received the Great Lakes Intercollegiate Athletic Conference All-Academic Excellence Award in July. To be eligible for all-academic honors, a student-athlete must have a cumulative grade point average of 3.0-3.49 on a 4.0 scale. The student-athlete must not be a freshman or first-year transfer and must be a member of a spring sports team.

- Andrew Kremkow (so., ME-EM), Men's Tennis



The following students received the Great Lakes Intercollegiate Athletic Conference All-Academic Excellence Award in July. To be eligible for all-academic excellence status, the student-athlete must have a cumulative grade point average of 3.5-4.0 on a 4.0 scale.

- Nathan Saliga (so., ME-EM), Men's Outdoor Track and Field
- Tylor Rathsack (jr., ME-EM), Men's Outdoor Track and Field

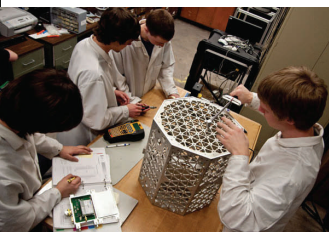


Collin Veele (sr., ME-EM) was one of two ASCO Numatics scholarship winners this year. He received the honor at the Pack Expo in Las Vegas. He was also awarded one of five ASME Auxiliary scholarships.



Student Competitions and Team Awards

Michigan Tech's Aerospace Enterprise team's first place in the US Air Force Research Lab's satellite design competition was highlighted in the Upper Michigan Green Aviation Coalition's website. Read more about the Enterprise at their webpage: <http://www.aerospace.mtu.edu/>



The men's and women's track and field teams recently earned All-Academic Team honors from the US Track and Field and Cross Country Coaches Association (USTFCCCA). The women's team, which was one of seven GLIAC schools to earn the award, posted a 3.44 cumulative grade point average. The men's team, which was one of three GLIAC teams to earn the honor, finished with a 3.25 cumulative grade point average. To earn the award, a team must have a cumulative grade point average of 3.0 or higher.

Michigan Tech's Formula SAE team finished the 2011 Formula SAE Michigan Competition in Detroit in 52nd place out of 120 teams competing.



They tied for 15th place in the design category. A picture of the team working on their car was featured in the July 5, 2011 issue of the SAE International Automotive Engineering magazine. Visit their website at: http://www.me.mtu.edu/advanced_motor_sports/formula_car.html