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ME-EM eNewsBrief, March 2019

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ME-EM

Michigan Tech eNewsBrief

Vol. 15 | Issue 1 | MAR 2019

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

MTU's Mobile Lab in Ypsilanti at the ACM - May 7 and 9

Chris Morgan (Operations Mgr/Mobile Lab) and several members of the ME-EM APS Labs will be bringing Michigan Tech's Mobile Lab to the American Center for Mobility (ACM) to showcase a fleet of electrified vehicles that have had connected and autonomous vehicle technologies integrated into them. Listen to the [Mich Business NetworkPodCast](#) for more information. If you are interested in stopping by and work in the automotive or connected vehicle field, join us for a tour! Space is limited, **RSVP** Jim Desrochers jtdesroc@mtu.edu by May 1st.

The ASME is also sponsoring an event at the Mobile Lab that week: "[Electric/Self-Drive Vehicle Technology In Action](#)" Tuesday, May 7 from 5:00 - 7:30 pm at the ACM. [RSVP required](#).



The Michigan Tech [mobile lab](#) is a fully outfitted laboratory that delivers hands-on HEV activities and features a powertrain test cell, configurable HEV, a portable chassis dynamometer, a "smart" interactive microgrid, and more.

ME-EM Alumni Reunion Scholarship Cruise - Early Bird Notification

Thursday, August 1. Boarding at 12:30 pm. Tour the Keweenaw Waterway aboard the Ranger III while learning about the exciting research happening in the ME-EM department. Hors d'oeuvres, beer, wine and soda will be provided by the department. Tickets are \$50 for adults and \$35 for children ages 1-15 (\$20 of the cost will be your donation to the ME-EM Department Alumni Scholarship Fund, and the remainder of the cost covers the price of a ticket to ride the Ranger III).

ME-EM Department Chair Travel - Contact (906) 487-2911

When on travel for the department, Dr. Predebon visits with alumni to get their feedback on our programs, their career and to give an update on the department and university. Give us a call if you'd like to visit when he is in your area.

Bill will be traveling to the following cities this summer and fall:

- June 3-7 Orlando, FL for the ASME Annual Meeting
- June 13-14 St. Joseph, MI for a CoE Advisory Board Meeting
- June 16-20 Tampa, FL for the ASEE Annual Conference
- October 25-28 Shanghai, China for the International Conference on Mechanical Engineering Education (ICMEE)



Past Events

SAE Clean Snowmobile Challenge—22 university teams competed this year from the U.S. and Canada, 13 in the Spark Ignition Gasoline class and 9 in the Compression Ignition Diesel Utility class. Michigan Tech's team took 1st place in the Combustion Ignition Diesel Utility Class. For 1st place they receive a trophy and \$1,000 prize, sponsored by Oshkosh. The team also received the Best Design Award for Diesel Snowmobile, one of the Can-Do E-Controls Innovation Awards with the prize of \$1,000 in value products, and the Most Sportsmanlike Award (\$1,000 sponsored by AVL) as recognized by the other teams. In the Spark Ignition Gasoline Class the Michigan Tech CSC team received the Polaris Best Handling Award and an MSA Award Plaque for Endurance for the successful completion of the 100 mile endurance and fuel economy event.



CSC Faculty Advisor Jason Blough stands with MTU's winning sled.

Promotions & Emeritus Appt.

Dr. Nancy Barr has accepted an appointment with the department as a Professor of Practice—Engineering Communications. Dr. Barr received her PhD and MS degrees from MTU in Rhetoric, Theory and Culture.

The ME-EM APS Labs promoted several staff members based on their performance and growing experience, skills and job responsibilities. Promotions include: **Brian Eggart** has been promoted to Research Associate; **Paul Dice, Chris Morgan** and **Henry Schmidt** have been promoted to Research Engineer II.

On January 14 the Board of Trustees conferred the rank of Professor Emeritus on **Charles D. Van Karsen**. Chuck continues to work with the department as a research professor.



Chuck Van Karsen works with students in the Mechanical Engineering Practice 3 course using Altair Finite Element modelling software.

ME-EM Faculty & Staff Awards and Accomplishments

Dr. Jeffrey Allen (professor) presented "Accommodation Coefficients During Liquid-Vapor Phase-Change: A Cryo/Neutron Study," at the Gordon Research Conference (GRC) "Micro and Nanoscale Phase Change Heat Transfer," in Barga, Italy.

Dr. Kishan Bellur (postdoc) presented a poster at the conference.

Dr. Andrew Barnard (assistant professor) presented his business, Nano-Sound, at the Husky Innovation Speaker Series, hosted by the Innovation Center for Entrepreneurship. Nano-Sound focuses on the elimination of noise from pipe and duct systems, like automotive exhausts and heating and ventilation pipes. Read the article in [Tech Today](#).

Dr. Andrew Barnard (assistant professor) has been nominated for the Michigan Tech 2019 Distinguished Teaching Award in the Assistant Professor/Lecturer/Professor of Practice Category, which recognize outstanding contributions to the instructional mission of the University. Based on student ratings of instruction responses, [five finalists](#) have been identified for the 2019 awards. The selection committee is soliciting comments from students, staff, faculty and alumni to aid in deliberation. Winners will be announced in early summer.

Dr. Nancy Barr (professor of practice) presented an overview of the ME-EM department's undergraduate portfolio program as part of a panel at the Council on College Composition and Communication in Pittsburgh. The panel, titled "The Performance of Portfolios Across the Curriculum," highlighted the use of portfolios in undergraduate program assessment and student development at a range of universities.

Dr. Nancy Barr, Leonard Bohmann (CoE), Mary Fraley (EF), Thom Freeman (William G. Jackson CTL), Jonathan Leinonen (SBE), Amlan Mukherjee (CEE) and Mary Raber (Pavlis Honors College), attended the 2019 KEEN National Conference in Dallas, Texas. KEEN partners with colleges and universities across the US dedicated to transforming their undergraduate engineering programs through the integration of opportunities to develop an entrepreneurial mindset.

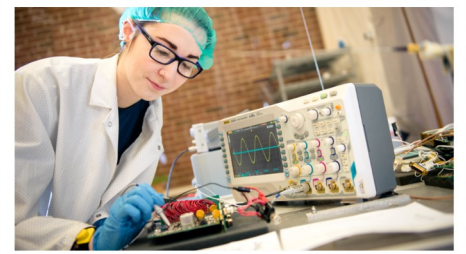
Dr. Nancy Barr was elected to the IEEE Professional Communication Society's (PCS) board of governors. The PCS's mission is to foster a community dedicated to understanding and promoting effective communication in engineering, scientific and other technical environments. Barr's three-year term began January 1 and runs to December 31, 2021.

Dr. Guy Meadows, research professor (ME-EM) Director of the Great Lakes Research Center, attended the National Association of Marine Laboratories (NAML) Winter Meeting in Washington D.C. on February 21 and 22. Meadows is currently serving as the President of the Northeastern Association of Marine & Great Lakes Laboratories (NEAMGLL).

Dr. Guy Meadows was quoted in the story "A submerged oil pipeline triggers a winter of frigid protest," in the [Washington Post](#). The story was also picked up by [msn](#).

Dr. Guy Meadows and Michigan Tech graduate student Michael Prast (CEE) were quoted in the story "Enbridge Line 5 Public Comment", in [Keweenaw Now](#).

Michigan Tech's Advanced Power Systems (APS) lab was one of the cover stories in the January edition of [dSPACE Magazine](#). The story "Efficient Platooning," begins on page 22, and features quotes and a photo of **Christopher Morgan** Operations Mgr/Mobile Lab (ME-EM). View the [video link](#) in connection with the story.



Undergraduate student working on an Aerospace Enterprise component.

(con't) ME-EM Faculty & Staff Awards and Accomplishments

Dr. Jeff Naber, professor (ME-EM) was quoted for the story "Why Can I See My Breath When A Car Drives By On A Cold Day?" on New Hampshire Public Radio (NHPR). The story, which was broadcast Friday (Jan. 11) is part of the "Ask Sam" regular program. Every other Friday morning, NHPR's Sam Evans-Brown answers listeners questions about the environment and outdoors. [Listen](#) here.

Dr. William (Bill) Predebon, department chair and professor (ME-EM) was presented with a Certificate of Recognition for his commitment to engineering education and continuous service to the society at the ASME International ME Education Leadership Summit in New Orleans. Bill has been involved with the ASME Committee on Engineering Education for the past 20 years, has served as VP and Chair, and continues to work closely with the committee to further mechanical engineering education at all levels.

Dr. William Predebon gave an invited talk on "Michigan Tech Industry 4.0 Resources for Northern Michigan" at the annual Northern Michigan Manufacturing Summit hosted by the Grand Traverse Area Manufacturing Council. Topics at the summit centered on automation and Industry 4.0 solutions. Read the [article](#) in the Traverse City Record – Eagle.

Dr. Darrell Robinette, assistant professor (ME-EM) and faculty co-advisor of the SAE/GM AutoDrive Challenge Team at MTU, attended the 2019 ASME Int'l ME Education Leadership Summit held in New Orleans and served as a speaker and panelist in the plenary "Empower" that discussed the various digital tools with which ME's are now expected to be proficient, and the effect they will continue to have on mechanical engineering education. Read [Tech Today](#).

Dr. Sheryl Sorby, professor emerita (ME-EM), is a [candidate](#) for the American Society for Engineering Education (ASEE) President-Elect. Dr. Sorby received her MSME and PhD from the ME-EM department at Michigan Tech. Dr. Sorby retired in 2011 from Michigan Tech as professor in the ME-EM Department and is currently a professor of engineering education at the University of Cincinnati.

Dr. Madhukar Vable, professor emeritus (ME-EM) describes how we can take the elements of our (USA) world-renowned graduate education to enhance undergraduate education in the December edition of [Prism](#).

Dr. Paul van Susante, senior lecturer (ME-EM) was selected by the College of Engineering Dean, Janet Callahan, for the Dean's Teaching Showcase. Details in the [CoE Blog](#).

Dr. Paul van Susante presented on "Lunar Resources" at the Lunar Exploration Renaissance conference and at the European Research Commission internal seminar in Brussels, Belgium in February. He presented as a member of the Advisory Board to the Lunar Volatile Mobile Instrumentation (LUVMI) rover project led by the Belgium based company Space Application Services that just received 3 million Euro funding under the Horizon 2020 program from the European Research Commission.

Dr. Paul van Susante appeared as a guest on the new Dr. Nandi Show which aired the week of Feb 11. The topic of the episode is "[Can Humanity Thrive on Another Planet?](#)"



Student Accomplishments/Awards

Mayank Bagaria (MS, ME-EM), competed as part of a two person team in the 2019 Rekhi Innovation, a crowdfunding competition to help promote and support student innovation and entrepreneurship through Michigan Tech's crowdfunding site, [Superior Ideas](#). Watch the [video](#) of their Audio to Visual Translator project that won a total of \$100.

Amanda Kautzer, (sr., BioMed and ME-EM), will be recognized at the 25th Annual Student Awards Ceremony held on April 19 for her scholarly achievement. She will be awarded the 2019 ME-EM Department Scholar Award, and has also been nominated for the Provost's Award for Scholarship. Read the article in [Tech Today](#).

The list of the [Spring 2019 Graduate Student Awards](#) includes several of our ME-EM graduate students:

Recipients of the [Outstanding Graduate Teaching Award](#) include: **Ahmad Basha Dudekula** (PhD), **Siddharth Bharat Gopujkar** (PhD), **Cameron Hansel** (MS), **Erica Jacobson** (PhD), **Si Liu** (PhD), **William Pisani** (PhD), **Darud Sheefa** (PhD), **Samantha Swartzmiller** (MS), **Upendra Yadav** (PhD), and **Zhuyong Yang** (PhD).

The Graduate School Dean's Award for Outstanding Scholarship recognizing demonstrated academic or professional qualities was awarded to: **Hui Huang** (PhD), **Xian Li** (PhD), **Miles Penhale** (PhD), and **Xiucheng Zhu** (PhD). See the full list in [Tech Today](#).

The Graduate School [announced](#) the recipients of the Doctoral Finishing Fellowship Awards. The ME-EM department recipients include: [Xin He](#), [Saeed Jafari Kang](#), [Xian Li](#), [Nirajan Miganakallu Narasimhamurthy](#), and [Zhuyong Yang](#).

Alumni and Friends News, Accomplishments & Awards

Mike Agnostini (BSME '97, MSME '99) Sr. Application Eng. Mgr. at MathWorks, will be a Keynote Presenter at the MATLAB EXPO held in Pune, India on May 2, 2019. Mike "demonstrates how engineers and scientists are using MATLAB and Simulink to successfully design and incorporate AI into the next generation of smart, connected systems."

Katerina Aifantis (BSME '02) was featured in the article "UF women in science share stories of resilience and discrimination," in the [Independent Florida Alligator](#). Aifantis is an assoc. prof. and faculty fellow of mechanical and materials engineering at U of FL.

Aaron Arvia (BSME '99) explains how he went from being an ME student at MTU to working in animatronics at Hasbro in a [video](#) provided to Michigan Tech Alumni & Friends.



Curtis Fortier (BSME '91, MSME '94) was nominated for an acting award by the [London International Film Festival](#). Fortier, an actor and stand-up comedian, was nominated in the Best

Supporting Actor in a Short Film category for his role in "[Hide and Seek](#)."



John Hallquist (MSME '71, PhD '74) was featured in the article "John O. Hallquist, Ph.D., Celebrated for Innovations in Software Development," in [Business News Articles](#) and [24-7 press release.com](#).

Mr. Hallquist was responsible for founding the Livermore Software Technology Corporation.

Cora Taylor (BSME '18) was featured in the article "Robotics changes student's career trajectory," in the [Charlevoix Courier](#). The story chronicles how Cora's involvement in Charlevoix High School's robotics led her toward a career in engineering. At Tech, Taylor was a member of the Formula SAE team, and a "MVP" as a student-worker in the ME-EM Shop.

John Scott (BSME '10) a former Michigan Tech Hockey player, was the guest on the podcast "The Punchline," on [Radiolab](#).

Grant Weidler (BSME '90) has been appointed to the Texas State Board of Acupuncture Examiners. Weidler received a bachelor's degree in mechanical engineering from Tech and a master of Acupuncture and Oriental Medicine from the American College of Acupuncture and Oriental Medicine. The story was covered on [Public Now](#).

Department Accomplishments

Tech Receives Gift of \$3M software. Caresoft Global selected MTU as the first university in the nation to receive its groundbreaking automotive technology. It allows students a chance to work hands on with 3D CAD models of entire advanced vehicles. The collaboration between **MTU and Caresoft Global** to provide engineering data software was covered by [techcentury](#). Read the full story on [mtu.edu/news](#).

Michigan Tech was referenced in the story "Federal government shutdown idles program that could help in Line 5 spill," in the [Bridge](#). The story was also featured on [mlive](#).

Research at Michigan Tech on developing autonomous marine vehicles was featured in the article "Michigan Technological University is making autonomous boats a lot smarter," on [cnet](#). The research is being featured at the Detroit Auto Show. The story was also picked up by [Ireland News](#) and [snews](#).

Student Competitions and Team Awards

Research at Michigan Tech was featured in the story "[AFRL teaming with Michigan Tech for maritime rescue solutions](#)," in the Defense Visual Information Distribution Service (DVIDS) news.



Photo by: Holly Jordan, AFRL
MTU SCD team viewing a maritime rescue helicopter during the October team gathering at Wright-Patterson Air Force Base in OH.

The story looks at the collaboration between Michigan Tech and Air Force Research Laboratory junior force researchers to reimagine life raft designs for mass rescue operations at sea. **Jacob Adams** (sr. ME-EM) was the project leader of the Michigan Tech student design team which worked closely with AFRL researchers and the Coast Guard to design a compact, light-weight but high-capacity life raft that could be dropped from a helicopter.

Current Contracts and Grants

Allen, Jeffrey (PI, ME-EM): “Testing the Equivalence of Evaporation and Condensation Coefficients Using the Constrained Vapor Bubble (CVB) Data from ISS Experiments”; sponsor: National Aeronautics and Space Administration; total award: \$40,000.



Bar-Ziv, Ezra (PI, ME-EM): “Torrefaction of Sorted MSW Pellets to Produce a Uniform Feedstock for Biopower”; sponsor: Battelle Energy Alliance - Idaho National Lab; total award: \$313,999.



Barnard, Andrew (PI, ME-EM): “ONR Graduate Traineeship Award: Multi-modal, Near-shore, Ice-covered Arctic Acoustic Propagation Measurements and Analysis”; sponsor: Office of Naval Research; total award: \$59,405.



Barnard, Andrew (PI, ME-EM); Rick Berkey, Zack Fredin, Joseph Thompson (Co-PIs, Pavlis Honors College): “Enterprise: SERC 2018 NSW 12 Vision Undersea”; sponsor: Stevens Institute of Technology; total amount: \$5,000.



Barnard, Andrew (PI, ME-EM); Rick Berkey, Zack Fredin, Joseph Thompson (Co-PIs, Pavlis Honors College): “Enterprise: SERC 2018 USCG 01 Mass Rescue Devices”; sponsor: Stevens Institute of Technology; total amount: \$5,000.



Barnard, Andrew (PI, ME-EM): “Automotive Noise Cancellation - Automotive HVAC”; sponsor: Calsonic Kansei North America; total amount: \$99,112.



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Blough, Jason R. (PI, ME-EM); Andrew Barnard (Co-PI, ME-EM); Kevin Johnson (Co-PI, SoT); “Frequency Response Inspection of AM Parts”; sponsor: Honeywell Federal Manufacturing & Technologies LLC; total amount: \$100,000.



Blough, Jason R. (PI, ME-EM); Jim De Clerck, Chuck Van Karsen (Co-PIs, ME-EM): “Tailorable Resonant Plate Shock”; sponsor: Honeywell Federal Manufacturing & Technologies LLC; total award: \$120,000.



Blough, Jason R. (PI, ME-EM); Jim De Clerck, Chuck Van Karsen (Co-PIs, ME-EM): “Fixture Design and Damage Potential”; sponsor: Honeywell Federal Manufacturing & Technologies LLC; total award: \$70,000.



Hill, Michael (PI, ME-EM); Parisa Abadi (Co-PI, ME-EM): “Conductive Cell Imprinted Polymers for Mature Induced Pluripotent Stem Cell Derived”; sponsor: American Heart Association; total award: \$104,060.



Miers, Scott (PI, ME-EM); Brian Eggard (Co-PI, ME-EM): “Snowmobile Mini-PEMS”; sponsor: Environment and Climate Change Canada; total award: \$73,872.



Naber, Jeff (PI, ME-EM); Bo Chen (Co-PI, ME-EM): “Ford Combustion Sensing Control”; sponsor: Ford Motor Company; total award: \$30,000.



Naber, Jeff (PI, ME-EM); Bill Atkinson, Paul Dice (Co-PIs, ME-EM): “Ford Ignition Studies”; sponsor: Ford Motor Company; total award: \$100,000.



Naber, Jeff (PI, ME-EM); Jason Blough, Paul Dice, Joel Duncan (Co-PIs, ME-EM): “Ford Sensor Fusion”; sponsor: Ford Motor Company; total award: \$160,000.



Students in Velovations Enterprise are developing a trail grooming system for snow bikes, the “Multiple Implement Grooming System (MIGS)”. Team Advisor: Steve Lehmann, ME-EM Res. Assoc.

Ra, Youngchul (PI, ME-EM): “Development and Application of Fuel Surrogate and Chemical Kinetics Model for PACCAR Truck Engine Simulation”; sponsor: PACCAR, Inc.; total award: \$49,000.



Rastgaar, Mo (PI, ME-EM): “NRI: INT: COLLAB: Anthropomorphic Robotic Ankle Prosthesis with Programmable Materials”; sponsor: National Science Foundation; total award: \$680,182.



Shahbakhti, Mahdi (PI, ME-EM); Jeffrey Naber (Co-PI, ME-EM): “Control-Oriented Modeling and Predictive Control of Advanced Dual Fuel Natural Gas Engines”; sponsor: National Science Foundation; total award: \$269,976.



Tajiri, Kazuya (PI, ME-EM): “Technology Review of Proton Exchange Polymer Electrolyte for Fuel Cell Application”; sponsor: Tosoh Corporation; total award: \$6,379.

University News & Awards

Michigan Tech Formalizes Commitment to Grand Traverse Region. Read the [Michigan Tech News](#) story on an agreement between Michigan Tech and the Grand Traverse region in Lower Michigan, reprinted in [Michigan Ag Connection](#). The partnership between Tech and leaders from the Grand Traverse region was also covered by the [Traverse City Record Eagle](#).



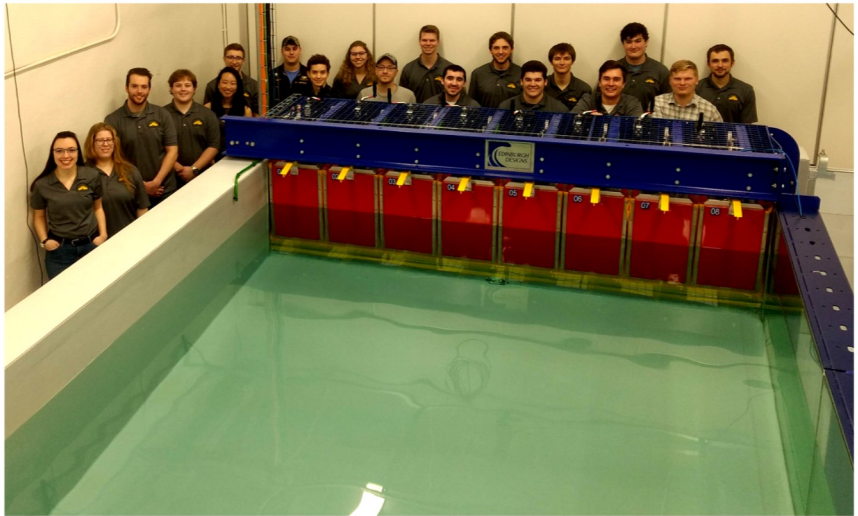
Michigan Tech's booth at the North American International Auto Show (NAIAS) in Detroit featured a Chevy Bolt, and a jet ski. An article in [CNET](#) features the Great Lakes Research Center's (GLRC) research on autonomous watercraft allowing more efficient handling in rough seas, and [Driven](#) makes note of the Tech display.



Former Michigan Tech employee **Eleanor "Cookie" Johnson** passed away at 76. Cookie worked as a technical writer for the College of Engineering and as a student advisor in the Civil and Env. Eng. dept. She retired from Michigan Tech in 1993. Memorial contributions can be directed to the "Cookie Johnson Undergraduate Endowed Scholarship Fund", through the [Michigan Tech Giving](#) page.

Michigan Tech was mentioned in the story "Start a business or work remotely in one of these 8 divine beach towns," in [Market Watch](#). Traverse City, Michigan was No. 7 on the list. In touting the Grand Traverse area, the article says, "Entrepreneurs here will also find plentiful venture capital funding and an endless supply of fresh talent from schools like MTU and MSU."

A Michigan Tech project was listed among nine selected by the U.S. Dept. of Energy's National Renewable Energy Laboratory (NREL) to receive funding for research to diversify transportation energy use. The article, "Nine projects receive \$18 million to advance technology for natural gas vehicles," appeared in [EE Online](#) and [Talk Business.net](#) & [Tech Today](#).



Students in the Strategic Education through Naval Systems Experiences (SENSE) Enterprise team often utilize Michigan Tech's new Wave Tank located in the ME-EM Building sub-basement. The team is advised by ME-EM Asst. Professor Andrew Barnard.



CAPSTONE CORNER

Senior Capstone Design Update

Twenty senior capstone design teams will be presenting their project results on Tuesday, 23 April. These projects were begun last September, and there is an excellent mix of both product and process design projects in the group. All are encouraged to attend if at all possible as these presentations typically reveal the capabilities of Michigan Tech's graduating engineers.

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