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ME-EM eNewsBrief, December 2018

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ME-EM

Michigan Tech

eNewsBrief

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Greetings from Dr. William (Bill) Predebon, J.S. Endowed Dept. Chair & Professor, Dept. of Mechanical Engineering - Engineering Mechanics at Michigan Tech. For your convenience, we have bolded the names of all **ME-EM alumni, students, faculty and staff** in the eNewsBrief. For the latest news and info about our faculty, students and staff, please visit our website at www.mtu.edu/mechanical, and visit us on Facebook, [MEEM](#) and [Twitter](#).

President Koubek's Tech Forward Summary

On Thursday, December 13, President Koubek hosted the final summary of his series of campus conversations held to position Michigan Tech as an internationally recognized academic thought leader in the Fourth Industrial Revolution. After listening to input from campus, the community and from alumni, nine initiatives were developed, and it was announced that two initiatives are to be led by ME-EM professors. **Jeff Naber** has been selected to lead the Autonomous and Intelligent Systems committee, and **Greg Odegard** will lead the Advanced Materials and Manufacturing committee. Read more in [TechToday](#), and on The Office of the President [Tech Forward](#) website.



Brian Krinock '85 and Tony Altobelli '86

Past Events:

Aerospace Expo Held at Tech

The Aerospace Industry Association of Michigan (AIAM), in partnership with Pure Michigan Business Connect (PMBC), hosted an aerospace expo on the Michigan Tech campus in October. The expo kicked off with a networking event and reception Monday, then moved into exhibits Tuesday. Some of the on-site buyers included GE Aviation, Parker Aerospace, RCO Aerospace, Woodward, Bell Helicopter, Cessna Aircraft and Liebherr. Read more about it in [TechToday](#) and TV6 FOX UP [article](#) and [video](#).



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ME-EM Academy Induction Ceremony

On October 20th, the Academy of Mechanical Engineering and Engineering Mechanics inducted two new members, honoring their excellence and leadership in engineering and civic affairs.

- ♦ **Tony Altobelli (BSME '86)**, Assistant Treasurer—Risk and Strategy, Alphabet, Inc. and Google, Inc.
- ♦ **Brian Krinock (BSME '85)**, Senior Vice President, Manufacturing & Production Engineering—Vehicle Plants Toyota Motor North America

Upcoming Events

ME Scholarship Winter Carnival Alumni Hockey Social will be held on Saturday, February 9, 2019 during the Michigan Tech vs. Minnesota State hockey game in the Husky Suite South Skybox of the John MacInnes Student Ice Arena. The game has a 5:07 p.m. start time. Tickets are \$30/person, which includes a \$15 donation to the ME-EM Alumni Scholarship Fund. Stadium food and refreshments are provided by the ME-EM department. Visit the [registration link](#) on the Michigan Tech website for more information and to purchase tickets for this fun-filled event, or contact the Alumni Services office (906) 487-2400.

SAE Clean Snowmobile Challenge - March 4-9, 2019 hosted by the Keweenaw Research Center and the ME-EM Department. If you are interested in becoming a CSC 2019 sponsor, contact Jay Meldrum at 906-487-2750, or email jmeldrum@mtu.edu.

Terry Woychowski (BSME '78), the out-going chair of Michigan Tech's Board of Trustees, gave the midyear commencement address held December 15. We thank him for his commitment to Michigan Tech and the ME-EM department. Terry has had a positive impact on our students and department during his tenure on the Board.

Over the years Terry has directed several challenging and meaningful Senior Design projects our way, personally sponsoring a "Human Powered Hammer Mill" and working with GM to provide funding for the Wounded Warriors Achilles Freedom Team [bicycle project](#). The ME-EM department hosted a reception for Terry on Wednesday, December 12 to honor and thank him for his service.



Terry is currently Vice President of Advanced Technology at LINK Engineering Company and president of Level V Advising, an engineering consulting and leadership development company. Read more about Terry in [TechToday](#).

Department Chair Travel

Dr. Predebon will be heading down to *New Orleans, Louisiana* to attend the ASME International Leadership Conference the *week of March 18*. If you'd like to meet with him while he's in the area, please call the ME-EM office (906) 487-2911, or email Karen Bess at kebess@mtu.edu.

Alumni & Friends News, Accomplishments & Awards

Ken Engquist (BSME '93) was featured in the article "Tinka commences Ayawilca PEA and strengthens its technical team with the engagement of Ken Engquist," on several media outlets including [Oldies 97.7](#), Lubbock, Texas, [Telemundo, Lubbock](#) and the [Pittsburgh Post-Gazette](#) among others.

Jeff Helminski (BSME '97) was featured in the article "Transparency drives results for Helminski, Auxo Investment Partners," in [MiBiz](#). Helminski who earned a bachelor's degree in mechanical engineering from Michigan Tech, is managing partner at Auxo Investment Partners.

Kevin Moran (BSME '10) was one of the "5 Under 35" Michigan Tech alumni who were invited to campus in November to share how their experiences at Michigan Tech prepared them for success after graduation. Kevin manages manufacturing operations and is the lead mechanical designer at H3D-gamma, a new company working to revolutionize the way we identify and localize gamma-ray sources. Read more in the [TechToday](#) article.

Dr. Denise Rizzo (PhD ME-EM '14) has been selected as the recipient of the 2019 SAE Rodica Baranescu Award for Technical & Leadership Excellence for the automotive engineering sector. Dr. Rizzo will receive the award at the SAE World Congress awards ceremony to be held in April.

Jeff Thompson (BSME '12) was featured in the article "Family ski-making business inspired by Keweenaw Peninsula," in [Crain's Detroit Business](#). After graduating from Tech, Thompson joined the family business Shaggy's Copper Country Skis in Boyne City, MI. Thompson is currently president of the company.

Department Accomplishments

Michigan Tech ME Program Earns 2019 Top Ranking

College Factual ranked the Mechanical Engineering program at Michigan Tech #16 out of 272 schools nationwide for 2019. College Factual states that "This puts Michigan Tech's ME program in the Top 10% of all ME programs in the United States".

Also included in their rankings is that Michigan Tech's ME program has also been ranked #3 out of 13 colleges in the state of Michigan. The article goes on to say "This makes Michigan Tech a great school for students who want to major in ME. Michigan Tech's ME program has achieved this State ranking two years in a row."

Student Awards

The ME-EM department had two Michigan Tech football team players receive Great Lakes Intercollegiate Athletic Conference postseason honors. Wide-receiver **Jacob Wenzlick (jr. ME-EM)** and punter **Michael James (sr. ME-EM)** were named to the All-GLIAC First Team. Read more in the [TechToday](#) article.

Emily Vigil (MSME, ME-EM), as part of the women's cross country team, ran at the NCAA Midwest Regional in Hillsdale, where they earned their best finish in school history - placing third and punching their ticket to the NCAA Championship.

Jacob Wenzlick (sr. ME-EM) picked up All-District Academic Honors and was recently named First Team All-GLIAC following an outstanding 2018 season. Wenzlick led the Huskies with 872 receiving yards while ranking fourth in the GLIAC this season. Wenzlick has been a GLIAC All-Academic Excellence/Academic Team honoree in each of the last 3 seasons.

ME-EM Department - New Hire

Mark Somero joined the staff this fall as a Senior Design Training Specialist and machinist in the ME-EM shop. Prior to joining the department, Mark worked at Finlandia University as a Computer Support Specialist. Mark has held several IT-related positions since earning his Associate of Applied Science in Microcomputer Support from Northeast Wisconsin Technical College, and his BS in Manufacturing Technology from Northern Michigan University.



"Best Poster Presentation." Kishan's presentation was based on his dissertation research, which will be extended with the new NASA Physical Sciences Informatics System (PSI) grant. [TechToday](#) article.



Paul Dice (BSME '10, MSME '16), Mechanical Engineering Researcher and Manager of the Advanced Power Systems (APS) Labs (ME-EM), and Joel Duncan, Research Associate, Advanced Power Systems Research Center (ME-EM), have each been nominated for a Michigan Tech "Making a Difference" Staff Award. A reception to honor all of the nominees and announce the recipients will be held by the Michigan Tech Staff Council on January 9.



Brian Eggart (BS Mining '02, MSME '07, PhD ME-EM '07), Research Engineer at the APSRC (ME-EM) and co-owner of [Moonlight Cycles](#), started a UP-based bike company to design quality, lightweight chromoly steel bicycles that prioritize design and performance to optimize fun and durability. Moonlight Cycles presented at a recent MTEC SmartZone—1 Million Cups small business startup event. See the [TV6](#) coverage of their presentation, and visit the [SmartZone](#) website.



Moonlight Cycles - Designed & Tested in Houghton MI.



Craig Friedrich, Professor & Director of Graduate Studies (ME-EM), presented two podium papers, "Enhanced Bone Fixation of TKA Tibial Tray Implants with TiO₂ Nanotubes" and "In Vivo Anti-Bacterial Effectiveness of Nanotextured Titanium Implant Surfaces" at the 31st International Society for Technology in Arthroplasty Conference in London, England Oct. 11/12.



Jon Furlich (BSME '15, MSME '18), PhD student (ME-EM), Andrew Barnard, Assistant Professor (ME-EM), and Jason Blough (BSME '90, MSME '91), Professor (ME-EM) presented and attended the ISMA-USD Noise and Vibration Engineering conference at KU Leuven in Leuven, Belgium in September.

Jon Furlich presented "Application of STFT and Wavelet analysis to MT clunk data: a case study."

Andrew Barnard presented "Active Noise Control in Pipes and Ducts using Carbon Nanotube Thermophones" and "Top 10 Mechanical Experiments for the Teaching of Sound and Vibration in Mechanical Engineering". Barnard also taught a seminar on acoustics in London on September 20.

Jason Blough chaired a session, attended the conference and met with peers to discuss future research topics.



Susanta Ghosh, Research Assistant Professor & Instructor (ME-EM), was awarded a \$5,000 seed grant as part of Michigan Tech's College of Engineering's Stage 1 Cross-Cutting Initiative. His proposal, titled: "Data-driven Ultrasound Elastography: Its Feasibility in Breast Cancer Imaging" outlines proposed research to find a reliable but non-invasive method for early detection using accurate ultrasound elastography techniques.

Faculty, Staff & Grad Student Awards & Accomplishments

Andrew Barnard, Assistant Professor (ME-EM), was mentioned in an article in the Centre Daily Times titled "Beaver Stadium can get as loud as a rock concert. How to cheer and protect your ears". The [story](#) referenced research Barnard conducted as a grad student at Penn State on noise levels at the university's Beaver Stadium.



Nancy Barr (MS '11 Rhetoric & Tech Comm; PhD '16 Rhetoric, Theory & Culture), Director, Engineering Communications (ME-EM), was presented the Michigan Tech Women in Science and Engineering (WISE) Leadership Award in appreciation for her service and leadership as WISE co-director for 2017-18 academic year.



Kishan Bellur (MSME '16, PhD ME-EM '18), Postdoctoral Scholar (ME-EM), recently attended the American Society of Gravitational & Space Research annual meeting in Bethesda, MD. This is now NASA's primary microgravity conference at which Kishan received the award for

(con't.) **ME-EM Faculty / Staff Awards & Accomplishments**

Michigan Tech's Great Lakes Research Center Director **Guy Meadows, Research Professor (ME-EM)**, is heading a crowd-funded project to find two of Lake Superior's most elusive historical shipwrecks. The Cerisoles and the Inkerman were WWI minesweepers last seen on their maiden voyage off the tip of the Keweenaw peninsula heading towards the Soo Locks, back in 1918. Using underwater robots, side-scan sonar and crowd-funding, and at average depths of 500 to 1,000 feet, a multi-layered search will be employed to solve the mystery of the whereabouts of these two vessels. Read more in [Unscripted](#).

Guy Meadows (GLRC) was referenced in the story "[The safety of Line 5: A threat to us all](#)," in Crains's Detroit Business.



Greg Odegard, Professor (ME-EM) was awarded a \$5,000 seed grant award as part of Michigan Tech's College of Engineering's Cross-Cutting Initiative. His proposal was titled "Mobility and Autonomous Vehicles in Unstructured & Semi-Structured Environments."



Greg was mentioned in the article "NASA Looking to Tiny Technology for Big Payoffs," which was picked up by several outlets including: [ParabolicArc](#), [Space Daily](#), [ECN](#), and [I-Connect 007](#).



Mo Rastgaar, Associate Professor (ME-EM), along with PhD students **Guilherme Ribeiro** and **Lauren Knop (ME-EM)**, presented "Correlation between Ankle Impedance and EMG Signals," at the [Fourth International Conference on NeuroRehabilitation](#) (ICNR), Pisa, Italy, Oct. 16-20, 2018.

Trisha Sain, Assistant Professor (ME-EM), and **Muhammed Imam, PhD student (ME-EM)** authored the paper "Effects of Cohesive Interfaces and Polymer Viscoelasticity on Improving Mechanical Properties in an Architected Composite," in the International Journal of Solids and Structures. Read the full [journal article](#).



Paul van Susante, Senior Lecturer (ME-EM), was awarded the 2018 Outstanding Professional Service Award by the Aerospace Division of the American Society of Civil Engineers. This award is given to an individual in recognition of distinguished service to aerospace engineering related to the mission of the Division who is judged to have contributed substantially to the Division's activities by: an established reputation for professional service; objective and lasting achievement in improving the conditions under which civil engineers advance aerospace sciences and technology, and space exploration and construction; significant contributions to improving civil engineering education and its application to aerospace engineering, space exploration and construction; guidance of young civil engineers in the formative stages of their careers; other evidence of merit that advanced the Division's professional objectives.

Current Contracts & Grants

Bar-Ziv, Ezra (PI, ME-EM); "Proof-of-Concept and a Prototype of an Integrated Torrefaction-Extrusion Unit for Organic Waste Streams"; sponsor: NSF; total award: \$750,000.

Barnard, Andrew (PI, ME-EM); "Demonstration of a Coaxial Thermophone for Active Noise Control in Vehicles"; sponsor: University of Michigan; total award: \$49,804.



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Endres, William (PI, ME-EM); "Senior Design: Air Force University Engineering Design Challenge"; sponsor: Technology Service Corporation; total award: \$25,000.

Endres, William (PI, ME-EM); "Senior Design: Gator XUV835 Exhaust System"; sponsor: John Deere; total award: \$17,250.

Endres, William (PI, ME-EM); "Senior Design: Air Cooled Inverter Heatsink"; sponsor: National Center for the Advancement of STEM Education (nCASE); total award: \$17,250.

Hook, Rachel (PI, ME-EM); "Various Sponsors (MTS Testing)"; sponsor: Various Sponsors; total award: \$500.

Miers, Scott (PI, ME-EM); "Exhaust Emissions Analysis"; sponsor: Arctic Cat, Inc.; total award: \$19,639.

Morgan, Chris (PI, ME-EM); "Delivery of Hands-On Professional Development Modules in Propulsion Systems"; sponsor: Dana, Inc.; total award: \$16,124.

Naber, Jeff (PI, ME-EM); "Post Doctoral Research Fellow Studies"; sponsor: Aramco Services Company; total award: \$167,126.

Naber, Jeff (PI, ME-EM); Alsup, Tucker; Dice, Paul; Duncan, Joel (co-PIs, ME-EM); "Catalytic Combustion Diesel Oxidation Trap Catalyst Study"; sponsor: Catalytic Combustion Corporation; total award: \$42,940.

Predebon, William (PI, ME-EM); "Performance Characterization of a Low-Power Hall-Effect Thruster"; sponsor: Orbion Space Technology, Inc.; total award: \$134,913.

Robinette, Darrell (PI, ME-EM); Morgan, Chris (co-PI, ME-EM); "Automotive Electrification Controls Engineering Professional Development"; sponsor: Borg Warner; total award: \$4,032.

(con't.) Current Contracts & Grants

Schmidt, Henry (PI, ME-EM); Atkinson, Bill; Lee, Seong-Young; Naber, Jeffrey (co-PIs, ME-EM); "Investigation of Injection Spray Characteristics for One HD Single-Hole Injector"; sponsor: Aramco Services Company; total award: \$55,219.

Worm, Jeremy (PI, ME-EM); "Spark Plug Electrode Erosion in a Heavy Duty Natural Gas Application"; sponsor: E3 Spark Plugs; total award: \$87,228.

Worm, Jeremy (PI, ME-EM); Morgan, Chris; Naber, Jeffrey (Co-PIs, ME-EM); "Delivery of Hands-On Professional Development Modules in Diesel Engine Calibration and Powertrain Instrumentation"; sponsor: US Dept of Defense—TARDEC; total award: \$47,000.

University News

Michigan Tech is listed among the top U.S. colleges for a commitment to encourage student voting according to Washington Monthly. In what it calls "our first-of-its-kind list of the schools doing the most to turn students into citizens," the magazine named 58 institutions "America's Best Colleges for Student Voting."

The website [WalletHub](#) has unveiled its list of the Best College and University Rankings for 2019. The University of Michigan heads the Michigan list, followed by Michigan Tech and Michigan State. Read the notice in Michigan Tech's [CEE blog](#).

Research conducted by Michigan Tech was referenced in the story "A Great Lakes pipeline dispute points to a broader energy dilemma," that was carried on media outlets throughout the country. Among those carrying the story were the [Stamford Advocate](#), [Greenwich Time](#), [Laredo Morning Times](#), [The Conversation](#) and [News Times](#).

A recent Michigan Tech graduate presented the "Strunnel" to the Board of Trustees at its regular meeting Friday (Nov. 14). In May, four Michigan Tech students shared their Senior Design project — an underwater utility corridor spanning the Straits of Mackinac — with Michigan law- and policymakers at the State Capitol.

The corridor, a 21-foot-diameter, 4.1-mile tunnel that would house all utility lines that cross the Straits, was the 2018 senior capstone project for 13 civil engineering and three construction management graduates. The students called their design the Strunnel. Read the full story at mtu.edu/news

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Senior Capstone Design Update

Seventeen Senior Capstone Design teams presented their final project results on Tuesday, 11 December. Projects ranged from R&D exploratory types, to existing product design improvements, to manufacturing process systems builds. The favorable driving conditions contributed to an excellent turnout in-person by a number of customers' organizations. Thank you to all of you who made the trip!

Nineteen projects were started in September, and Critical Design Reviews with the 21 teams working on those projects will be underway just after this goes to press. Each team will be individually engaged with the SCD support team in discussions related to their work to-date as well as their go-forward project plans.

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

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