

FALL 2018 NEWSLETTER





Dear Students, Alumni, and Friends,

Greetings!

On behalf of all of us at the Mechanical & Industrial Engineering department, I am pleased to share with you the latest news from our department. From exciting student, faculty and alumni awards, to phenomenal growth in the size and scope of our faculty, to several new departmental initiatives, we have much to celebrate this Fall.

Our students and faculty received numerous accolades this year. MIE Senior John Chuma was recognized as the 2018 UMass Male Scholar-Athlete Award for his academic excellence and outstanding pole-vaulting career. Our doctoral student Tom Hagedorn won the ASME Best Dissertation Award, while PhD student Michael Rossi won a NSF fellowship and an MIE Team headed by doctoral student Alexander Smith won first place in the UMass Innovation Challenge. Prestigious faculty awards this year run the gamut from an Armstrong Award to Professor Shannon Roberts to ASME’s Lewis Moody Award for Best Paper to Professor Schmidt, to Fellow of American Society of Metals for Professor Hyers and a College of Engineering Outstanding Teaching Award to Matt Lackner. Finally, two multi-talented and accomplished alumni, Brian Mullen of Therapeutic Systems and Frank Riordan of DMC will join us to receive the College of Engineering Outstanding Alumni Award in November.

As our student enrollment has grown in leaps and bounds -- 131% growth over five years --we have recently hired **eight** new faculty members in our strategic areas of interest, including four new faculty in biomedical engineering, two in manufacturing, one in human factors, and an Endowed Chair in Renewable Energy. Our department is now actively in search of a faculty in the field of robotics, as well as a new Director of Engineering Management and a Professor of Practice in Manufacturing.

So many of our students, faculty -- and even board members --are working on amazing sustainability and socially-conscious engineering projects, in fact, that it’s no surprise to us that Sierra Club’s Sierra magazine named UMass in its top ten “Cool Schools.” Professors Matthew Lackner and Erin Baker published an essay in The Conversation about why the offshore wind energy industry will soon vastly expand, with Massachusetts leading the way. Alum and co-chair of our Industry Advisory Board, Martin Ross, led the charge to install solar panels in an extraordinary Haitian school and thereby provide reliable electricity there for the first time. Our doctoral student Mo Kaikai is working with the Massachusetts Clean Energy Center Earn and Learn project to teach students at Springfield High School of Science and Technology. Several MIE students served as project managers for our Engineers Without Borders projects in Ghana and Kenya.

Thank you for your continued help, support, and advice, and be sure to check our website for the most up-to-date MIE happenings.

Sincerely,

Sundar Krishnamurty
Professor and Department Head
Mechanical & Industrial Engineering

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MIE ADVISORY BOARD

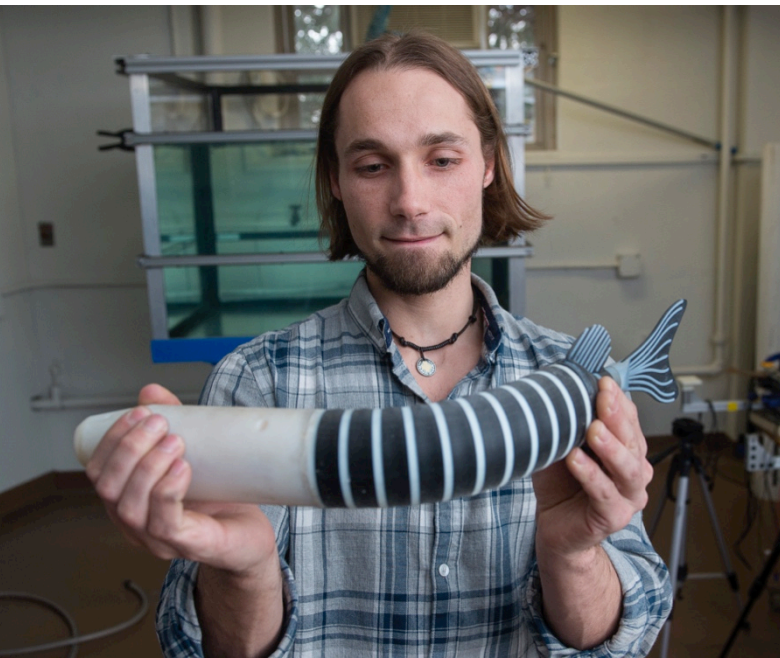
- Alaina Adams**, Fitbit
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This newsletter is published in the Fall and Spring Semesters by the Mechanical and Industrial Engineering Department at the University of Massachusetts Amherst.

Email your news, contributions, and suggestions to **Heather Caldwell** at hbcaldwell@umass.edu University of Massachusetts Amherst

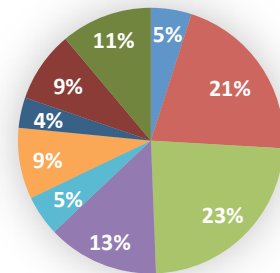
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160 Governors Drive
Amherst, MA 01003-9303

CURRENT STATISTICS FOR THE MIE DEPARTMENT



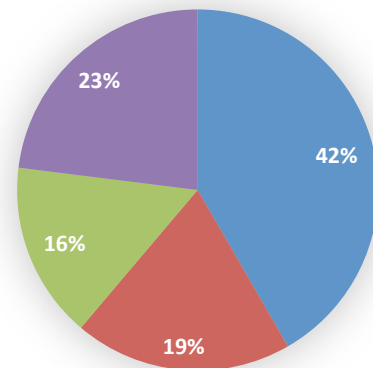
84% of the 2017 MIE undergraduate students went onto graduate school or had jobs within 6 months of graduation with an average salary of \$64,000.

Where Did They Go?



- Energy
- Manufacturing
- Defense
- Life Sciences
- Automotive
- HVAC/MEP
- IT Services/Software
- Other
- Aerospace

2018 Undergraduate Degrees Awarded



- MIE
- ChemE
- CEE
- ECE

Alumnus Frank Riordan Awarded Senior Alumni Award

Frank Riordan founded DMC, a custom engineering and software development firm with a focus on factory automation, in 1996. DMC has enjoyed steady, incremental growth over 22 years in business. It has grown from the first two employees to over 170 employees and offices in Chicago, Boston, Denver, Houston, New York, Reno, Seattle, and St. Louis. DMC engineers implement projects across the globe in industries including food and beverage, automotive, oil and gas, aerospace, product development, and more. DMC's four primary service areas are manufacturing and automation intelligence, test and measurement automation, custom software and hardware development, and digital workplace solutions.

Since the company's inception, Riordan's guiding motivation has been, "What can I do to help everyone at DMC reach their potential?" DMC's culture was recognized as one of Chicago's Best Places to Work by *Crain's Chicago Business* in 2014, 2015, 2016, 2017, and 2018. DMC is proud of its employee cross-training, diversity of work, and flexibility. By sponsoring a culture built by and for employees, DMC attracts and retains a staff that makes it one of the best

places to work in the country.

The "DMC Cares" initiative invites employees to plan events that make a difference in their communities and to donate to charitable causes with a corporate match. DMC also sponsors university robotics competitions. Other charities that Riordan supports include the Make-A-Wish Foundation, Cystic Fibrosis Foundation, and Chicago Youth Centers.

Riordan previously worked with Cinch Connectors, Pratt & Whitney, and Whistler Corporation, and was also vice president of controls and automation technologies. He holds a BS in mechanical engineering from the University of Massachusetts Amherst and an MS in mechanical engineering from the University of Illinois, Chicago. He has been a member of the Siemens User Advisory Board since 2010 and the cochair of the Siemens Solution Partner program since 2009. Riordan is also a proud member of the Young Presidents' Organization (YPO) and was inducted into the Chicago Area Entrepreneurship Hall of Fame in 1996.



Frank Riordan
Founder, DMC

Alumnus Brian Mullen Awarded Junior Alumni Award

Brian Mullen is an entrepreneur, design engineer, and researcher with a passion for designing innovative medical products and assistive technologies.

His passion for early stage new product development, innovation, and entrepreneurship started as an undergraduate at UMass while receiving his BSME. It was his experience on an independent study focused on assistive technology design that Mullen found his area of focus which led him to stay at UMass to continue studying design with Sundar Krishnamurty and resulted in a MSME and PhD.

As a graduate student Mullen studied the early stages of design, going from clinical research to product and new business design. The work focused on how to take a multidisciplinary approach to designing products for people with mental illnesses, neurological disorders, and cognitive disabilities.

Mullen founded an early stage medical device company, Therapeutic Systems, to translate the technology he developed in graduate school to the market. The mission of the company was to help people across the life span who are struggling with brain disorders such as autism, ADHD, PTSD, and anxiety-based disorders by providing them with evidence-based and insurance-reimbursed medical

quality technologies. The initial focus of the company was therapeutic wearable technologies that included a unique way to provide a neuromodulation intervention through the sensory stimulation. As CEO, Mullen led Therapeutic Systems in winning the MassChallenge in 2011, the UMass Innovation Challenge, and a VentureWell E-Team award; raised seed investment, launched a class I product and generated revenue through sales; and gave a TedX talk on designing for people with mental illness.

Beyond his work as strategy manager at the Brigham and Women's Hospital's Digital Innovation Hub (iHub), Mullen currently serves on the Industry Advisory Board for the Center for Personalized Medicine at UMass, is the interim president of the board for the Institute for Human Centered Design, is an assistant professor at MassArt as part of the Master's of Design Innovation program, and coaches and mentors entrepreneurs and start-ups in top national programs. He continues to advocate to improve care for people with mental illness and brain-based disorders. His advocacy focus is working on legislation to advance innovation in the field with the simple message: "we will not have parity in care until we have parity in innovation."



Brian Mullen
Founder, Therapeutic Systems, and Strategy Manager, Brigham and Women's Hospital Digital Innovation Hub

Professor Ana Muriel, Industrial Engineering



Professor Ana Muriel is the associate department head of MIE, the director of the Supply Chain Management Research Group, and an irreplaceable cog in the supply chain management at the College of Engineering and far beyond.

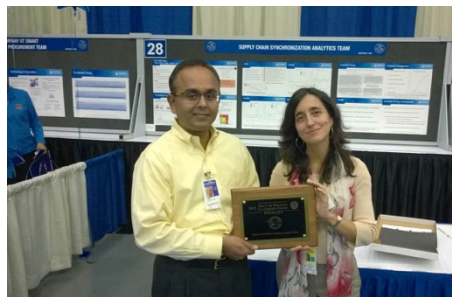
Muriel explains her research specialty as an industrial engineer: "Supply chain management takes a holistic approach towards managing the flow of material and information throughout the supply network - including different tiers of suppliers, manufacturers, warehouses, and stores - in order to maximize system-wide profits and create customer value."

Muriel's publications and presentations have attracted a number of awards: the 2017 IISE Best Track Paper; 2007 Premio Nacional de I+D en Logística Integral (National R&D Award in Logistics), 1er Congreso de Logística y Gestión de la Cadena de Suministro, Zaragoza, Spain; 2007 Best Paper Award in the Closed Loop Supply Chain Track, POMS; Research Highlight in the IIE Magazine in 2004; and 1998 Finalist in the George E. Nicholson Student Paper Competition.

Just as importantly, Muriel's work has helped many companies improve their operations and customer service, while lowering their costs. She has worked with a variety of organizations, ranging from start-ups such as Artaic Innovative

Mosaic to multinationals such as General Motors and Pratt & Whitney. Her work has been funded both by the companies directly and by the National Science Foundation. Her accomplishments were recognized with a finalist place in the coveted 2015 Leadership Award, Pratt & Whitney, East Hartford, Connecticut.

As we strive to build a more sustainable world, Muriel's research portfolio has expanded over time to include remanufacturing and reverse logistics operations as well. She is quick to point out that the concepts and tools she uses can also be applied to other organizations beyond manufacturing industries. In particular, she has worked closely with healthcare organizations through her collaboration with Professor Hari Balasubramanian

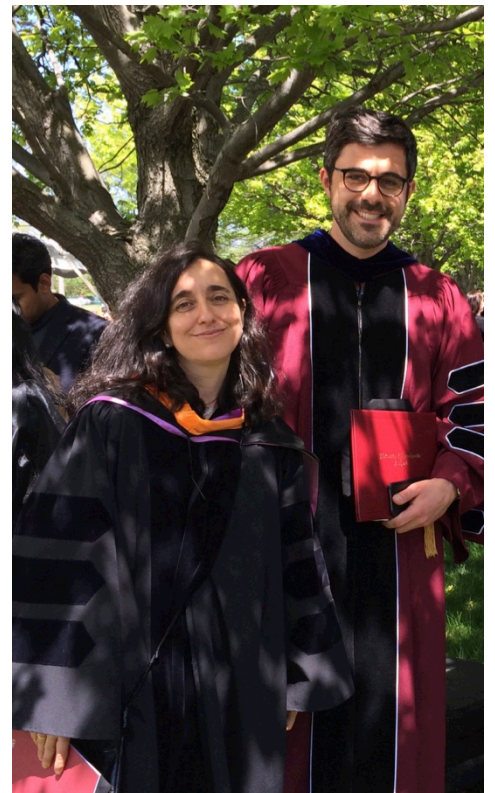


In her role as associate department head, Muriel's focus has been on promoting the B.S. in Industrial Engineering and the M.S. in Engineering Management programs, as well as expanding the online course offerings in the MIE department through Continuing and Professional Education. While industrial engineering is seeing significant growth and job opportunities, it is still little known to many prospective students and the population at large. Muriel is committed to bridging this gap and increasing the number of industrial engineers who graduate from the MIE department ready to take on those jobs. She is working towards a more flexible M.S. in the Engineering Management curriculum, which will allow students to better adapt the curriculum to their career goals, and towards providing more experiential opportunities in the form of internships, co-ops, and practical independent studies.

Muriel was president of the Women in Operations Research and Management Sciences in 2008-2009. Her contributions in this role were recognized with the 2009 Moving Spirit Award, as chosen by the Institute for Operations Research and the Management Sciences (INFORMS), the largest professional society in the world for academics and industrial personnel in the field of operations research.

Muriel's favorite aspect of her work is mentoring students, seeing them grow into young professionals as they work on practical research and move on to sought-after positions in the industries she collaborates with. She also loves bringing the industry perspective to her courses in Logistics, Production Planning and Control, and Quality Control and Improvement.

Muriel earned her Ph.D. at Northwestern University, spent two years as a faculty member at the University of Michigan Business School, and joined the College of Engineering faculty in 1999.



Professor David Schmidt, Mechanical Engineering



At the MIE student Banquet this spring, Professor David Schmidt was honored as the “Professor with the Best Stories.” So when we asked Professor Schmidt to oblige us with a story about teaching at UMass, he didn’t disappoint. Schmidt explained how one semester he saw an advertisement for a bottle-shaped beer can that promised to keep beer cooler longer. At the time, Schmidt was teaching a heat transfer class, and he was certain the company was making an utterly bogus claim. To test it, he told his students to bring him an example of the advertised bottle-shaped can as well as a standard beer can of the same volume. The students then filled the bottles with cold water, put in thermocouples, and took data at five-minute intervals during the lecture. “By the end of the class it was obvious that this fancy bottle was far

inferior,” says Schmidt. “The students were outraged and wanted to issue a press release. But I told them I already had an Ig Nobel and didn’t want another!”

Indeed, Schmidt is the 2001 recipient of the Ig Nobel Science award for an article he published in *Scientific American*. His study calculated the force of a shower curtain’s deflection and the spray that drives it, to answer the question how even a cold shower sucks in the curtain. According to Marc Abrahams, MC of the Ig Nobel ceremony and editor of *Annals of Improbable Research*, the Ig Nobel is the prize that “first, make you laugh, then, makes you think.” This is surely one of the secrets to Schmidt’s success as a teacher: he first makes you laugh with his great stories, then makes you think. And there’s no question that Schmidt has been an exceptional professor: In 2017, he received the College of Engineering Outstanding Teacher Award.

Schmidt’s research focus is clean energy and additive manufacturing. He helps design fuel injectors to reduce engine emissions. He is also working on offshore wind energy from a fluids angle. He does not design wind turbine blades or support structures. Instead, he makes the design tools the industry will need to actually build the turbines: “I figure out how to calculate the impact forces from breaking waves, for example,” explains Schmidt. “What happens when they hit an offshore structure? If you don’t account for the wave slamming force, your beautiful wind farm can become a

huge clean-up site.”

Students usually come to Schmidt excited to perform research. But Schmidt says he wants to be sure they know how to write and communicate their results. “I feel like one of my big contributions to their careers is helping them express these complex engineering ideas.” In Schmidt’s graduate students office he put up a poster that says: “Remember kids: the only difference between screwing around and science is writing it down.” No surprise, then, that Schmidt has won not just research awards - he has been principle investigator or co-investigator for over \$4.4 million of research revenue over the last decade - but publication awards, like the Lewis F. Moody Award for Outstanding Original Paper he just received at the 2018 FED Conference and the Marshall Award for Best Paper in 2016, not to mention a Recognition of Excellence in Oral Presentation in 2016. He is a Fellow of the Society of Automotive Engineers (SAE) and is the recipient of the Ralph Teetor Educational Award for the Society of Automotive Engineering, as well as the Office of Naval Research Young Investigator Award.

Schmidt received his B.S. from North Carolina State University in 1992, his M.S. from Stanford University in 1993, and his Ph.D. from the University of Wisconsin Madison in 1997.

Below: Professor David Schmidt receiving the 2018 SAE Fellow Award





Wen Chen

Assistant Professor

Wen Chen runs the Multi-scale Materials and Manufacturing Laboratory. His main research thrust revolves around the interface of materials science and advanced manufacturing. He earned his M.Phil. in Industrial and Systems Engineering from The Hong Kong Polytechnic University and his Ph.D. in Mechanical Engineering & Materials Science from Yale University. He completed his postdoctoral work at Lawrence Livermore National Laboratory in California.



Xian Du

Assistant Professor

Xian Du's Intelligent Sensing Lab research focuses on the scale up of flexible electronics printing processes from lab to industry using high-precision in-line inspection and pattern recognition technologies for large surface quality control. He earned his Ph.D. in Innovation in Manufacturing Systems and Technology from the Singapore-MIT Alliance at the National University of Singapore and at MIT. Du was a research scientist at MIT before he joined UMass in January of 2018.



Tingyi "Leo" Liu

Assistant Professor

Liu is the head of the Interdisciplinary Interface Engineering Laboratory, which aims to utilize micro and nano fabrication to study diverse interfacial phenomena and to engineer the heterogeneous interfaces for interdisciplinary applications. Before coming to UMass Amherst, Liu did a Postdoc in the California NanoSystems Institute at UCLA. He earned his M.S. and Ph.D. at UCLA in Mechanical Engineering and his B.E. in Electrical Engineering at Zhejiang University in China.



Jinglei Ping

Assistant Professor

In his Nano/Bio Interface Lab, Jinglei Ping combines nanomaterials and nanomanufacturing to create miniaturized biosensing platforms for solving high impact problems in healthcare, diagnosis, and environmental monitoring. Ping received his B.S. from Sun Yat-sen University and Ph.D. from the University of Maryland–College Park. Before coming to UMass Amherst, Ping was a research associate at the University of Pennsylvania.



Krish Thiagarajan Sharman

Endowed Chair in Renewable Energy,

An expert on marine renewable energy and energy producing offshore structures, Krish Thiagarajan Sharman has been appointed to the Endowed Chair in Renewable Energy. Thiagarajan Sharman will collaborate with DOER staff on renewable energy research and projects. Thiagarajan Sharman came to UMass Amherst last spring after serving six years as the Presidential Chair in Energy at the University of Maine.



ASME'S CIE DISTINGUISHED SERVICE AWARD PRESENTED TO IAN GROSSE

Professor Ian Grosse received ASME's CIE Distinguished Service Award, "in recognition and appreciation of leadership and outstanding service to the ASME Computers and Information in Engineering Division." The award was presented at the 2018 IDETC/CIE Conference this August in Quebec City, Canada. Professor Grosse has indeed served the ASME CIE division executive committee (ExComm) for a number of years, as ExComm secretary, program executive, vice-chair, and chair, and in his last year of service, as the ExComm awards subcommittee chair.

ERIN BAKER APPOINTED ASSOCIATE DEAN OF THE COLLEGE OF ENGINEERING

Professor Erin Baker has been appointed Associate Dean of UMass College of Engineering, a key position that includes more than a dozen significant job responsibilities. Just a few of those duties involve: initiating and/or coordinating major research proposals, centers, or other collaborative research initiatives; organizing institutional support and leveraging of state, private, and industry sources of funding as required; and providing oversight of existing and planned college facilities (e.g., space allocations, renovations, and needs assessment).



2018 ARMSTRONG SCIENCE GRANT AWARDED TO SHANNON ROBERTS

Congratulations to Professor Shannon Roberts for receiving the 2018 Armstrong Award for Science, which will grant \$36,000 for a two-year project to encourage transformative research on campus that introduces new ways of thinking about pressing scientific or technical challenges.

Roberts and co-researcher and award recipient Philip Thomas, assistant professor of computer science, have joined forces to launch a pilot study to address the question of when an automated driving system should warn a human driver that it may have to relinquish control of the vehicle in the near future.

BOB HYERS ELECTED FELLOW OF THE SOCIETY OF ASM INTERNATIONAL

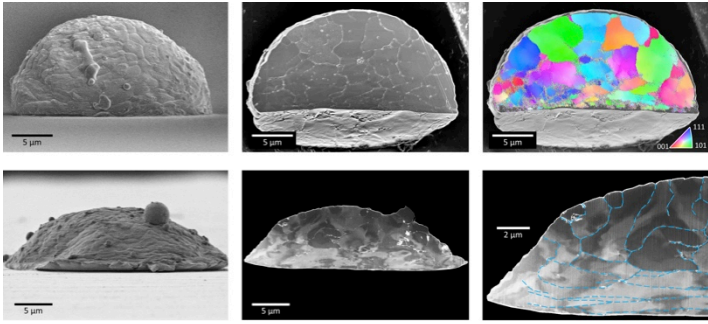
Professor Bob Hyers was elected a Fellow of the Society of ASM International (formerly the American Society of Metals) by the Board of Trustees. Hyers' ASM citation reads: "For distinguished contributions in the field of high-temperature materials processing and properties, with proven applications of these technologies in aerospace and extractive industries."

Hyers does research on high-temperature materials, condition monitoring and prognosis of structures, and physics-based modeling of materials processing and failure. He served as the 2015-2016 Chair of ASM's Boston Chapter, and continues on ASM Boston's Executive Committee. At the Society level, he serves ASM International as a member of their Women in Materials Science and Engineering Committee.



MATT LACKNER WINS COE OUTSTANDING TEACHING AWARD

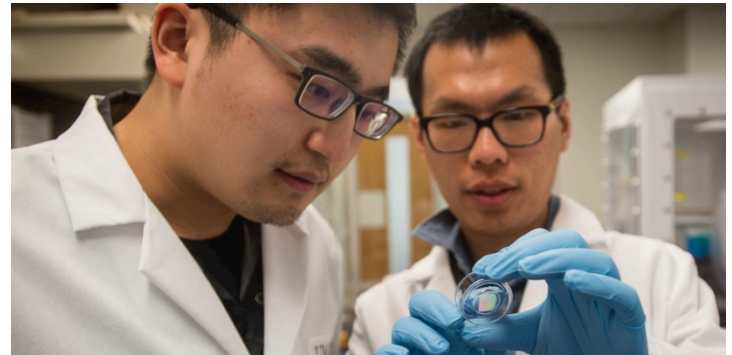
This year's College of Engineering Outstanding Teaching Award was awarded to Professor Matt Lackner. As MIE Associate Dean James Rinderle wrote, "In every dimension Matt is truly an outstanding teacher and mentor to students." Rinderle also observed that Lackner "doesn't just 'cover' material, he gets students to engage with it. Matt is an exemplar in delivering on our promise to best prepare the next generation of engineers."



Professor Jae-Hwang Lee is leading a \$500,000 research project to greatly improve an important additive manufacturing process for creating various polymeric coatings and plastic parts while saving energy and refraining from using hazardous compounds. Lee's project is funded for three years by the National Science Foundation (NSF).

Professor Ashwin Ramasubramaniam leads a joint US-Israel team that has just received a grant from the National Science Foundation's Division Of Materials Research to promote inexpensive, large-scale fabrication of electronic and optical devices within single sheets of 2D materials. The research promises to make far-reaching impacts on computing, data storage, and consumer electronics.

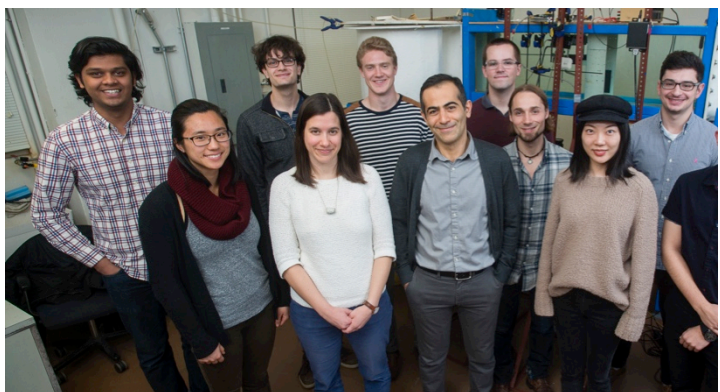
Professor Yubing Sun is part of a team of researchers that has demonstrated that human pluripotent stem cells can be guided to become the precursors of the central nervous system and that mechanical signals play a key role in this process. Sun and his colleagues outlined their findings in a recent paper published in the journal *Nature Materials*. Sun is a co-first author and co-corresponding author of the paper.



Professor Shannon Roberts has been awarded a grant from the National Science Foundation to study vehicle cybersecurity and find solutions to the problem that most vehicles are not designed with cybersecurity in mind and, as a result, they are susceptible to cyberattacks.



Professor Stephen S. Nonnenmann is part of a team of researchers that created a "quantum material" that mimics a shark's ability to detect the minute electric fields of small prey. The new sensor performs well in ocean-like conditions and opens the way for potential uses ranging from defense to marine biology. The findings were published in the Jan. 4 issue of *Nature*.



Professors Yahya Modarres-Sadeghi (Principal Investigator) and Jonathan Rothstein (Co-Principal Investigator) have been awarded a \$461,774 grant from the National Science Foundation's Division of Chemistry, Bioengineering, Environmental and Transport Systems (CBET). The proposal, titled "Fluid-structure interactions between non-Newtonian viscoelastic fluids and flexible cylinders," plans to study the interactions that occur between a flexible or flexibly-mounted structure and the elastic instabilities that can result from the flow of a non-Newtonian viscoelastic fluid past that structure.

Graduate Student Spotlight: Mojue Kaikai, Industrial Engineering



Describe your research.

Essentially gauging the effects of project-based curriculum framed around clean energy and engineering within urban demographic high schools. I have been developing and implementing curricula backed by research, then measuring student's changes in their interest in STEM fields and hopes for sustainable development.

How did you get interested in this work?

The many documentaries in high school brought to my attention how serious of an issue climate change is and how often it gets overlooked (ex: Al Gore's *An Inconvenient Truth*). Also, as an undergraduate through NSBE (National Society of Black Engineers) I

worked with their 2012 SEEK (Summer Engineering Experience for Kids) internship program. Here they highlighted the need of underrepresented minorities in STEM. The GREEN (Global Renewable Energy Education Network) Program in Costa Rica showed how they use their sustainable infrastructure to not only create jobs but educate and spread sustainability awareness as well. A 2013 UMass summer REU and competing in the 2014 Bill Clinton Global Initiative allowed me to research and develop curriculum with a clean energy and engineering focus specifically for communities where those types of curriculum are misrepresented.

Where did you do your undergrad work and what did you study?

I went to UMass Amherst for my undergraduate degree as well and studied Mechanical Engineering.

What is the most exciting or meaningful aspects of your work here at UMASS?

Collaborating with the Education Department. They have been really helpful in the overall development of my studies and data collection methods. The interdisciplinary courses and trips taken through being an

IGERT fellow was also eye opening in terms of understanding more of how economics, policy, and environmental impacts play a role in clean energy decisions.

How did you choose UMass?

I was a senior recruiting undergraduates for the Bill Clinton Global Initiative within Professor Baker's freshman Introduction to Engineering class. After the class she told me to consider turning my efforts into doctoral research.

Hometown: Lowell, MA.

Hobbies: Listening to music.

Awards: Dixon Fellowship, NSF IGERT Fellowship, NEAGEP Fellowship

Undergraduate Student Spotlight: Abigail Laughlin, Mechanical Engineering



Are you involved in any UMass Amherst student organizations?

Here at UMass, I am a member of Society of Women Engineers and a project manager for the Kenya project in Engineers Without Borders! I was also a New Student Orientation Leader and am still involved with various events run by NSO!

What have you most learned from your involvement in these clubs?

From my involvement with these organizations, I've learned so many valuable lessons, but I think the most important thing I learned was how crucial it is to expand your

network and find people who share your values. Through EWB especially, I've been able to meet incredible peers and faculty who want to make the world a better place. These people have inspired me in so many ways and showed me the type of person I want to be.

What are your post-graduate dreams?

After I graduate in the spring of 2020, I'd love to work in the biotechnology industry and I'd also love to travel and experience living in a different part of the world.

Have you been able to do any hands-on engineering work?

I am very fortunate to be involved with Professor Jiménez's research group, where I am currently studying the impact of mechanical vibrations on endothelial cells. I also worked as a manufacturing engineer intern at Cepheid, a molecular diagnostics company in the San Francisco Bay area, this past summer.

What has been most important to you about your undergraduate experience so far at UMass?

I've had a fantastic UMass experience so far, but I think the most valuable part has been all of the resources and opportunities that have been available to me as a student! From being able to travel to Kenya, to attending conferences across the country, and even just having so many academic resources like SI sessions and accessible professors, I have been given so many tools and had so many experiences that will allow me to be successful in my future.

Hometown: East Longmeadow, MA.

Hobbies: Running, hiking, skiing, and spending time outdoors!

Awards: Dean's Scholarship (3 years running), Quabbin Wire Scholarship (twice), Sinha Scholarship from the College of Engineering

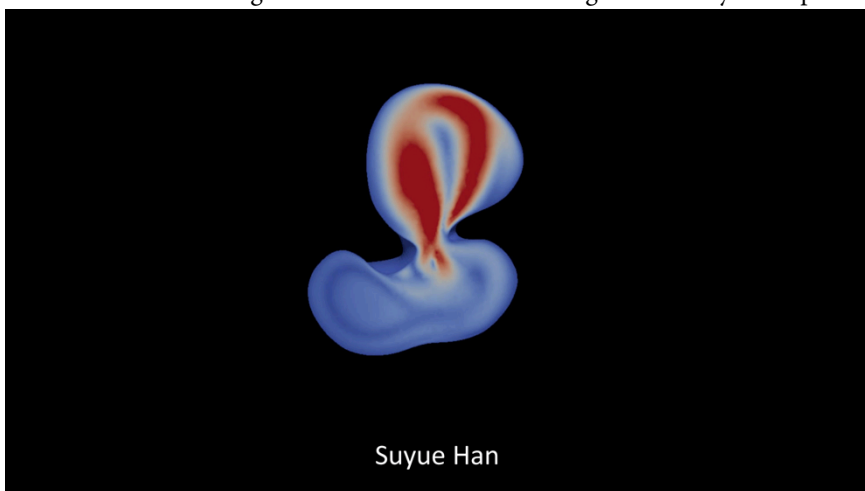


MIE PhD Student Tom Hagedorn Wins ASME Best Dissertations Award

The Computers and Information in Engineering Division (CIE) of the American Society of Mechanical Engineers (ASME) has selected MIE post-doctoral researcher Thomas Hagedorn as the recipient for this year's CIE Best Dissertation Award. Hagedorn's dissertation, directed by MIE Professors Sundar Krishnamurty and Ian Grosse, presents a knowledge-based approach to addressing the existing and emerging challenges of medical device design. The CIE Best Dissertation Award was established to recognize a promising young investigator who authored the best Ph.D. thesis of the year in the area of computers and information in engineering.

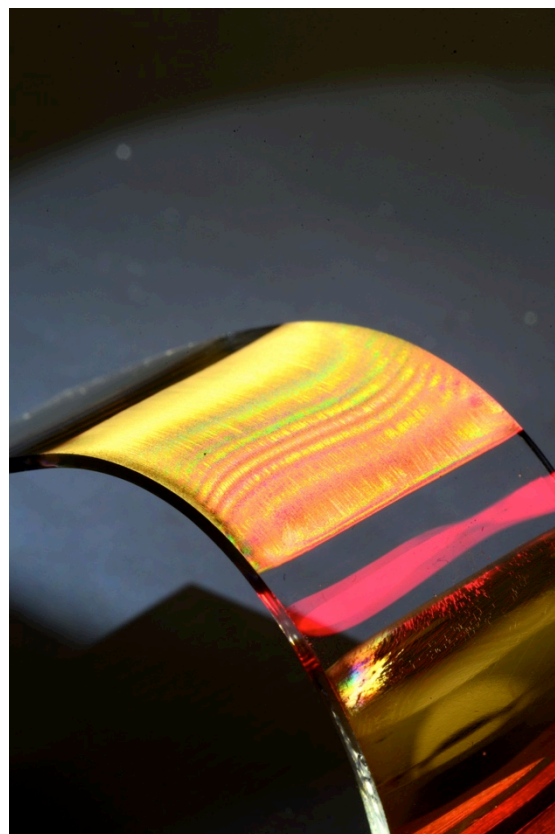
First Annual Gallery Contest for Graduate Students

Our new Graduate Program Director, Yahya Modarres-Sadeghi, spearheaded an annual Graduate Student Gallery Competition, awarding prize money for the best student image or video highlighting their current research. Winner of the 2017 Graduate Student Gallery Contest was MS graduate Amir Kazemi Moridani for his image of his dissertation work on a tunable thermal emitter (pictured here) and doctoral student Gavin Portwood for his video on fluid turbulence related to geophysical flows. Doctoral student Suyue Han finished second with her image of reduced order modeling for aneurysm rupture.



Suyue Han

Above: Suyue Han's second place image



Above: Amir Kazemi Moridani's winning image

MIE Doctoral Students Win Big in UMass Innovation Challenge Final

Two teams spearheaded by doctoral students in our Department were among the three winners of the University of Massachusetts Innovation Challenge Final on April 5, when \$65,000 in seed money was distributed to the prizewinners. eBiologics finished in first place, winning \$30,000 and led by Alexander Smith, a doctoral student in Mechanical Engineering. The other prizewinning MIE team was Kinase, Inc., which finished in third place and won \$15,000. Kinase is headed by Nariman Banaei, another doctoral student in MIE.



Left: Winning Teams eBiologics and Kinase

Graduate Student Mo Kaikai Helps High School Students Learn Clean Energy Engineering

Doctoral student Mo Kaikai is spearheading the Massachusetts Clean Energy Center Earn and Learn project to teach engineering and sustainability to students at Springfield High School of Science and Technology. Kaikai's mission is to ensure that economically disadvantaged urban teens are exposed to opportunities to learn about sustainability and put it into practice in a hands-on way. And this project was definitely hand's on: students completed a 10-hour OSHA safety certification and operated a scissor lift, mounted a wind turbine, and wired a backpanel, among other projects.



Above: Students at Springfield High School of Science and Technology work with MIE Ph.D student Mo Kaikai



Above: Spring 2018 Graduate Student and Faculty Picnic

Chinmoy Mohapatra, Lead Author of Paper Winning Esteemed Lewis F. Moody Award from ASME, Tweeted a Congrats from Government Official in India

Graduate students Chinmoy Mohapatra (PhD), Gabriel Jacobsohn (MS) and Eli Baldwin (PhD), co-authored a paper with Professor David Schmidt that received ASME's prestigious 2018 Lewis F. Moody Award for "outstanding original paper useful to the practice of mechanical engineering" at the ASME 2018 Fluids Engineering Division Summer Meeting. Odisha-born Mohapatra even received a congratulations from a central minister of entrepreneurship in the Indian province of Odisha who tweeted: "This is an honor for Odisha and India. Chinmoy's research and effort for energy conservation and pollution prevention will inspire the future young generation."



Graduate Student Leadership Council Creates Community for MIE Students

MIE's Graduate Leadership Council, headed up by Gavin Portwood and including Anita Anup Dey, Buyannemekh Munkhbat, Ericber Jimenez Francisco, Autumn Phaneuf, Mark Price and Kashyap Sundara Rajan have rolled out a number of new graduate student initiatives, including an annual picnic and softball game for students and faculty, monthly pizza events, faculty chalk talks, new students orientation, and the establishment of a student lounge.



MIE Undergraduate Makes Finals of INFORMS Student Paper Competition

Undergraduate student Matthew Eden of the Mechanical and Industrial Engineering (MIE) Department has been selected as one of six finalists for the 2018 Undergraduate O.R. Prize Competition at the annual meeting of the Institute for Operations Research and the Management Sciences (INFORMS) in Phoenix, Arizona, from November 4 to 7. Eden's research paper is titled "Evolving contact network algorithm: a new simulation method for modeling HIV, a disease with low prevalence but a critical public health issue in the US."



MIE Senior John Chuma Selected as UMass Amherst 2018 Male Spring Scholar-Athlete Award Winner

John Chuma, a senior in the Mechanical and Industrial Engineering Department and an outstanding pole-vaulter on the UMass Amherst Men's Track and Field Team, has been selected as the university's 2018 Male Spring Scholar-Athlete Award winner. Born in Worcester and a 2014 graduate of Westborough High School in Massachusetts, Chuma is the son of Todd Chuma and Pamela Willard. During a remarkably consistent career, Chuma has pole-vaulted between 15 feet and 16 feet at least 26 times and holds the UMass outdoor record in that event.

MIE Alumna Makes Connected World's Honor Roll of 10 Technology Leaders Under 40

Mechanical engineering alumna DeAnna Robear '15, a partner enablement engineer at **PTC**, has been named as one of the 10 **Pioneers 2018** by *Connected World* magazine. As *Connected World* describes this honor, the recipients are trailblazers, innovators, and pioneers representing "10 technology leaders under 40 who help pave the way for a more connected society." Robear's interest in industrial consumer products such as cars and airplanes evolved into a mechanical engineering degree, and eventually, a career in the Internet of Things. "I design solutions that help people and products operate in a way previously inconceivable," she says. For example, Robear develops solutions that revolutionize the way companies service home appliances and other machines using remote monitoring, machine learning, anomaly detection, and augmented reality technologies.



Pest-Controlling Drone from Senior Design Project Featured in Local News Outlet

A feature story written by Michael Connors in the April 8 *Daily Hampshire Gazette* looked at a group of six MIE students who developed a drone for their senior capstone project that can deploy agricultural chemicals safely and very precisely to control pests such as mosquitoes. The students designed their drone, when perfected, to fly fully autonomously on a specified path and release chemicals with very meticulous accuracy. The drone will deploy a chemical called "Mosquito Bits," a product that, when dropped in water, grows a bacteria to kill mosquito larvae. The chemical is harmless to people, pets, and other animals.



STUDENT CLUB NEWS

Last year MIE students served as project managers for two **Engineers Without Borders** projects in Kenya and Ghana. In August, an eight person team headed up by ME Senior Sami Levalley travelled to Saviefe-Deme, Ghana to construct nine biosand filtration systems that can remove disease-causing pathogens from village water. This year the EWB Ghana project will be managed by ME sophomore Laura Townsend, and the team plans to rehabilitate an existing water borehole. The Kenya team was managed by ME junior Abigail Laughlin and the students helped to install a pump to a well in Nguluni, Kenya, as well as pipes to two schools and a central area of the village.

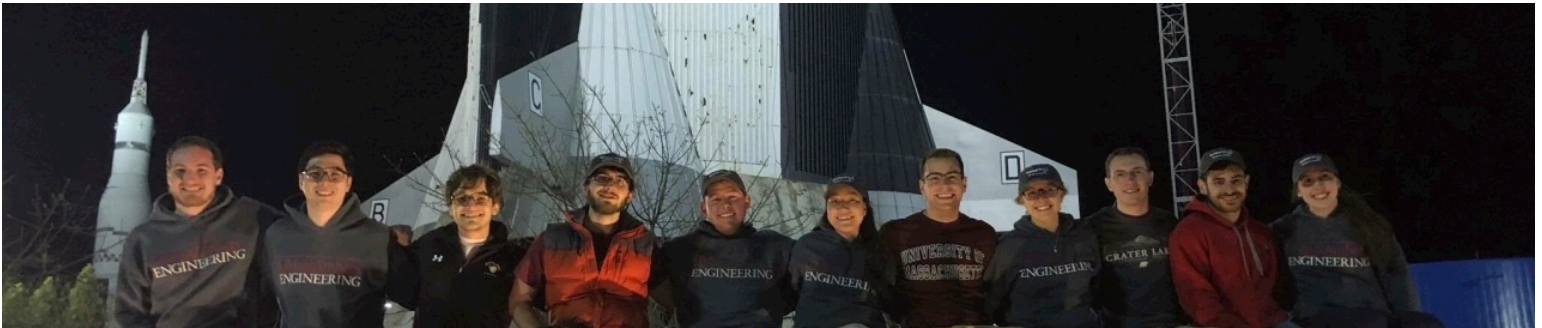
Right: Ahnya Dague ('19) helps build the rainwater catchment system base with students from Nguluni primary school in Nguluni, Kenya as part of Engineers Without Borders.



Our **Super Mileage Vehicle Team** recently received a generous donation in the name of the estate of Eunice E. Cuff, an undergraduate alum, in the amount of \$120,000. They begin conceiving, designing and building their latest vehicle this fall for their national competition in Spring 2019.

Makerspace Club offers hand tools and 3D printing services to students for academic and personal projects. This fall the club looks forward to their annual Tech Teardown, an event where students take apart electronic devices like computers or musical keyboards to see how they work.

The UMass Student Chapter of the American Society of Mechanical Engineers (ASME) is looking forward to participating in the national student robotic design competition again this Spring. The club also organizes hands-on educational workshops and hosts guest lecturers with industry experts, as well as offers social events for like-minded engineers.



Our **Rocket Team** had a successful launch this past April in NASA's Student Launch Challenge in Huntsville, Alabama. The rocket reached 4447ft in altitude before the drogue parachute successfully deployed at apogee and the main parachute at 500 ft AGL (above ground level). The national competition engages teams from many colleges, universities, and schools across the nation in an eight-month commitment to design, build, and fly payloads and/or vehicle components on high-powered, scale-model rockets to support the "Space Launch System," America's new rocket program being developed for deep space travel.

Every spring **IISE (Institute of Industrial and Systems Engineers)** student club hosts a Lean/Six-Sigma Yellow Belt Training. The Lean Six Sigma is a methodology for continuous improvement of a system, which relies on a collaborative team effort to improve performance. The yellow belt is the initial certification in the system.



The Human Factors Engineering Society celebrated its first full year on campus with a kickoff icebreaker last October 2017. The club aims to encourage interest in Human Factors engineering, and supports human centered design as a fundamental towards good engineering. This year the club participated in six meet and greet events with Human Factors-related engineers invited to campus as speakers.

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