

MechSE News

MECHANICAL SCIENCE AND ENGINEERING SPRING 2022



The Sidney Lu
Mechanical Engineering
Building opens at Illinois



MechSE *by the numbers*

U.S. News rankings
for mechanical
engineering
programs

#7

Undergraduate
program

#5

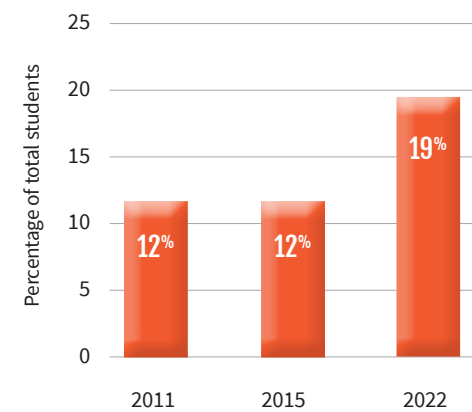
Graduate
program

#2

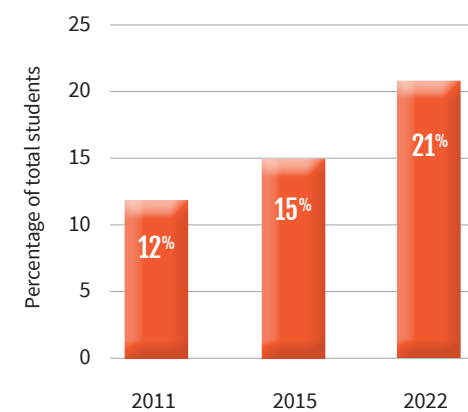
Online master's
programs

Women in MechSE

Women pursuing MechSE PhD



Women pursuing MechSE BS



MechSE facilities

Sidney Lu Mechanical
Engineering Building

137,672 sq ft

Mechanical Engineering
Laboratory

148,960 sq ft

Total

286,632 sq ft

From the Department Head

Dear MechSE Alumni and Friends,



I send my warmest greetings from a currently chilly Urbana! It has been more than two years since we last sent you a magazine to share news about MechSE students, faculty, and your fellow alumni. Don't be worried about the COVID-induced pause in printed news—the MechSE community has continued to thrive, through teaching,

learning, and research breakthroughs. MechSE has reached new heights in many ways.

As you will read in the following pages, the highly anticipated Sidney Lu Mechanical Engineering Building officially opened in October 2021. Students have populated the facility's laboratory spaces since August, and in January 2022 they began settling into the classrooms and exploring new opportunities to make things in the Innovation Studio and make connections in social spaces.

With an abundance of study nooks, meeting rooms, and social gathering spaces throughout the building, the Lu MEB boasts the vibrant atmosphere we only dreamed of in previous years. I'm still getting used to dropping past the coffee shop down the hall in the morning to find it buzzing with energy—I had no idea students were awake that early! It is amazing what a difference the space transformation is having on us. I must say, it feels “very 2022.”

At this point, wearing masks is still a requirement in campus buildings, and it's a constant reminder of all we have been through. Nevertheless, I feel a sense of normalcy returning as we see each other eye to eye, and like all of us I look forward to having the pandemic fully behind us as soon as possible.

If you come to campus, please visit the Lu MEB and have a look around. MechSE alumni are always welcome to schedule a tour. You can contact Alec Verone, Assistant Director of Corporate & Alumni Relations, via email at averone2@illinois.edu or by phone at (217) 265-5251.

In the meantime, please have a look at the building dedication plaque we have pictured on this page. Our new facility would not have been possible without the generosity of our alumni and friends, and Mr. Sidney Lu led the way with incredibly generous, enabling gifts. We are forever grateful.

Thank you all for your ongoing support.

Sincerely,

Anthony M. Jacobi
Head & Richard W. Kritzer Distinguished Professor
Department of Mechanical Science and Engineering



Sidney Lu Mechanical Engineering Building

October 1, 2021

Made possible by the philanthropy of distinguished alumnus Sidney Lu (BSME 1981), this student-focused facility combines the best of today's architecture and technology with the solid engineering traditions established through the original Mechanical Engineering Building, which opened in 1950.

The Sidney Lu Mechanical Engineering Building sets a new standard in education, innovation, and community for the students of the Department of Mechanical Science and Engineering.

We are forever grateful to Mr. Lu for his incredible spirit, generosity, and dedication to MechSE students and the University of Illinois.

MechSE

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Transformed Sidney Lu Mechanical Engineering Building

Over the past two years, MechSE's home and headquarters has been transformed. It is now known as the Sidney Lu Mechanical Engineering Building (Lu MEB), named after the department's distinguished 1981 alumnus. MechSE held the official opening ceremony on October 1, 2021.

Mr. Lu saw the opportunity to transform the building into an incredible, 21st-century facility that would inspire and empower current and future generations of MechSE students to be the best in the world. He stepped up in a powerful and meaningful way, donating more than \$20M to make this vision a reality. This historic project included a five-story addition on the east side of the original building, a single-story addition to the north, and 66,000 square feet of existing space reimagined, reengineered, and optimized for education, innovation, and community.

"It is an architectural gem and a beautiful addition to our Urbana-Champaign campus," said University of Illinois President Timothy Killeen.

All MechSE alumni are invited to come walk the hallways and see the new spaces for themselves. Until then, please enjoy the photos provided on the following pages.

Photos by Tom Harris photography

◀ The sun was beaming the afternoon of October 1, 2021. Doors to the new Sidney Lu Mechanical Engineering Building opened to welcome guests to the official dedication and ribbon-cutting ceremony.



▲ UIUC Chancellor Dr. Robert Jones was one of several distinguished speakers at the October 1 event.



▲ The official "ribbon cutters" were (from left) MechSE Professor Placid Ferreira, MechSE Department Head Tony Jacobi, The Grainger College of Engineering Dean Rashid Bashir, University of Illinois President Timothy Killeen, Dr. Jay Lee (a colleague of Guest of Honor Sidney Lu, who was unable to attend), MechSE Director of Facilities and Operations Damon McFall, and UIUC Chancellor Robert Jones.



▲ Informal huddle spaces punctuate the active-learning hallways and underscore a key value of engineering education, “collaboration is everywhere.”



▲ MechSE has revolutionized its student laboratory facilities, with flexible lab space for mechatronics, design and manufacturing, motion and controls, heat transfer, senior capstone design, and integrated those with our new MakerWorks space that brings together an innovation studio, wood shop, and machine shop featuring a vast set of CNC machine tools, woodworking tools, 3D printers, laser cutters, waterjets, and thousands of square feet of makerspace.



“This is going to be a space where imagination and engineering really come together very seamlessly.”

–Dr. Robert Jones, UIUC Chancellor

◀ Flexible laboratory/classroom spaces were created by enclosing an existing, unused exterior courtyard that became the ideal interior, high-ceiling location for integrating instruction and hands-on design. In the newly created infill labs, existing exterior materials were preserved to reveal the space’s history as an open courtyard.



“I can’t thank enough all the great teachers who touched my life. Thank you for opening my mind and letting me know the small way I could contribute to the continuing success of this great institution. Hopefully, we have planted the seed for learning, for innovation, and for collaboration.”

– Mr. Sidney Lu (BSME ’81)

▲ The centralized café—the only Starbucks in a UIUC academic building—is a space for students and faculty to break from their education-focused activities and form social connections that continue long after graduation. Reconfigurable furniture allows for various types of group activities for students and faculty from across campus and various disciplines.

▼ The existing corridors are reanimated by the new addition where a seamless transition provides abundant daylight to spaces that were dark and isolated prior to renovation.



▲ Technology-rich active-learning classrooms allow students to display work to small groups or the whole class, thus encouraging engagement and ownership of ideas while windows into the courtyard infill labs allow for further discovery.





▲ Community collaboration spaces, located adjacent to large active-learning classrooms, are connected vertically via a central stair, a design feature enhanced to encourage physical activity over elevator use to support occupant wellness.



▲ Completely reconfigurable furnishings within the active-learning classrooms support optimal or even non-standard learning environments while windows to the pre-function space allow for discovery.

“This building represents our determination to stay at the forefront of the mechanical engineering and engineering mechanics evolution. I believe everything starts from mechanical engineering and the mechanics of materials.”

– Dr. Rashid Bashir, Dean of The Grainger College of Engineering



◀ Building-integrated photovoltaics (BIPV), are visible from the new gathering spaces and cast dynamic shadows across the floor as they generate clean electricity.

Support MechSE today. Leave a legacy for tomorrow

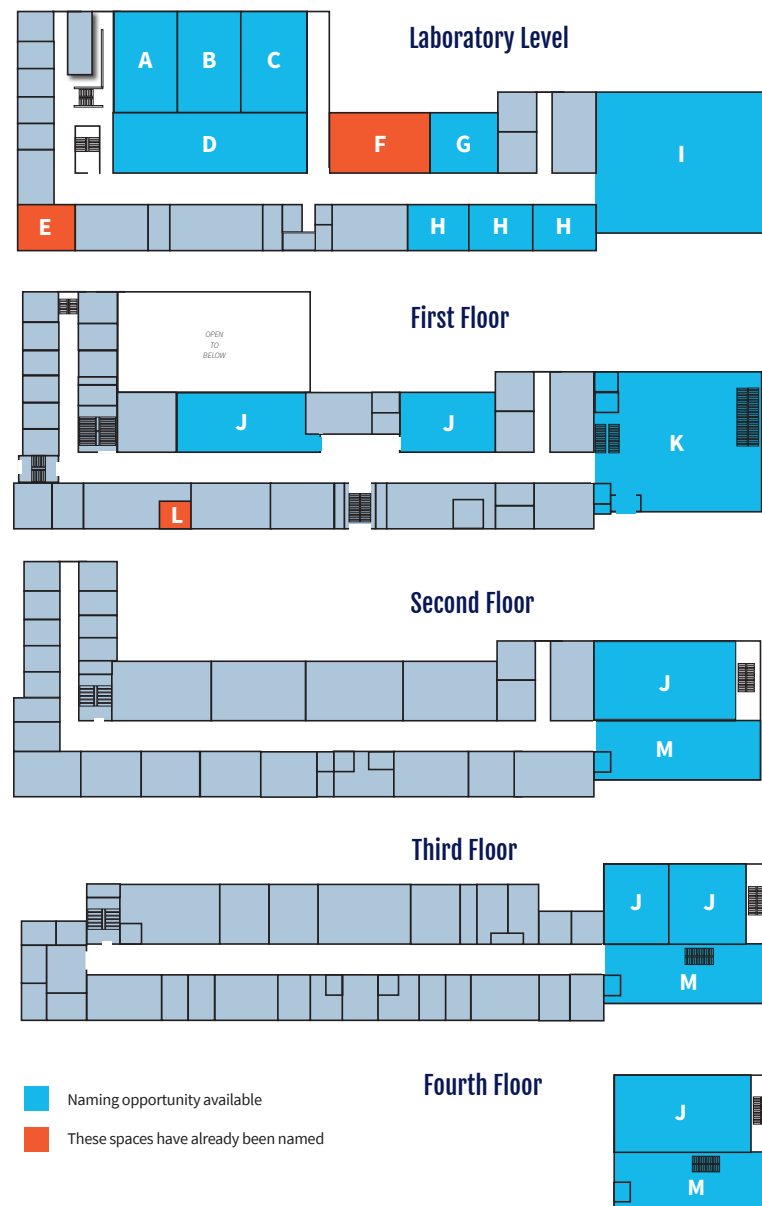
Explore having a named space in the Lu MEB

The Sidney Lu Mechanical Engineering Building will help MechSE maintain its place among the nation's elite engineering programs for decades to come. Thanks to the generosity of our alumni and friends, we have nearly reached the \$41M needed to fund the project. But we are not done yet! It will take additional gifts for us to reach the total amount.

Please consider partnering with us to make this transformation a reality. Our naming opportunities are shown here, from labs and classrooms to study spaces and even the student center that contains our new Starbucks.

- A. I-Flex TAM Laboratory
- B. Mechatronics Laboratory
- C. Design and Manufacturing Laboratory
- D. Metal Maker Space
- *E. Bill Jackson Motion and Controls Laboratory
- *F. Sargent & Lundy Heat Transfer Instructional Laboratory
- G. Wood Maker Space
- H. Senior Capstone Design Labs
- I. Innovation Studio
- J. Active Learning Classrooms
- K. MechSE Student Center
- *L. Lizheng Winston Zhang PhD 1996 Conference Room
- M. Social/study gathering hubs

*These spaces have already been named.



Get Started

To reserve a paver or discuss naming opportunities, please contact our Assistant Director of Corporate and Alumni Relations, **Alec Verone** (averone2@illinois.edu). You can also start the process by visiting the MechSE website (mechse.illinois.edu/LuMEBgiving).



SCAN ME

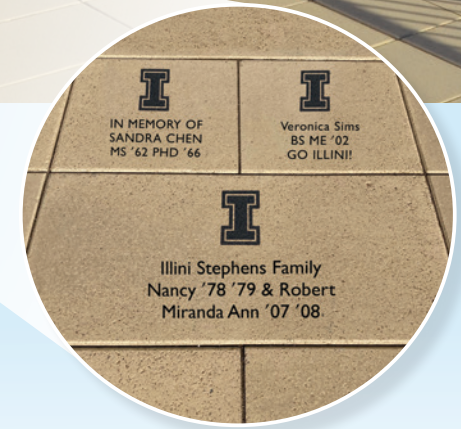


Reserve your inscribed paver in the new plaza

A prominent feature of the Sidney Lu Mechanical Engineering Building is the new paved brick Plaza, a beautiful gathering spot at the center entrance facing Green Street. Individuals, companies, and organizations can become a permanent part of the building, the MechSE Department, and the University of Illinois by sponsoring one of these paver bricks with a short, engraved message.

With your inscription, you can honor a friend or family member, memorialize a cherished professor, or show the world you are a supporter of MechSE at Illinois. An engraved paver can also be a unique, meaningful, and lasting gift.

Your sponsorship of the Sidney Lu MEB Plaza will distinguish you as a friend of MechSE and an important supporter of our historic new building. Your contribution is an investment that will help empower the department to continue to be among the best in the world.



Choose from two levels of sponsorship:

- \$1,500** 12x12" paver with Block I and 3 lines of text
- \$3,000** 24x12" paver with Block I and 3 lines of text

A limited number of pavers are available. Scan the QR code to reserve your paver and create your own permanent imprint at the University of Illinois

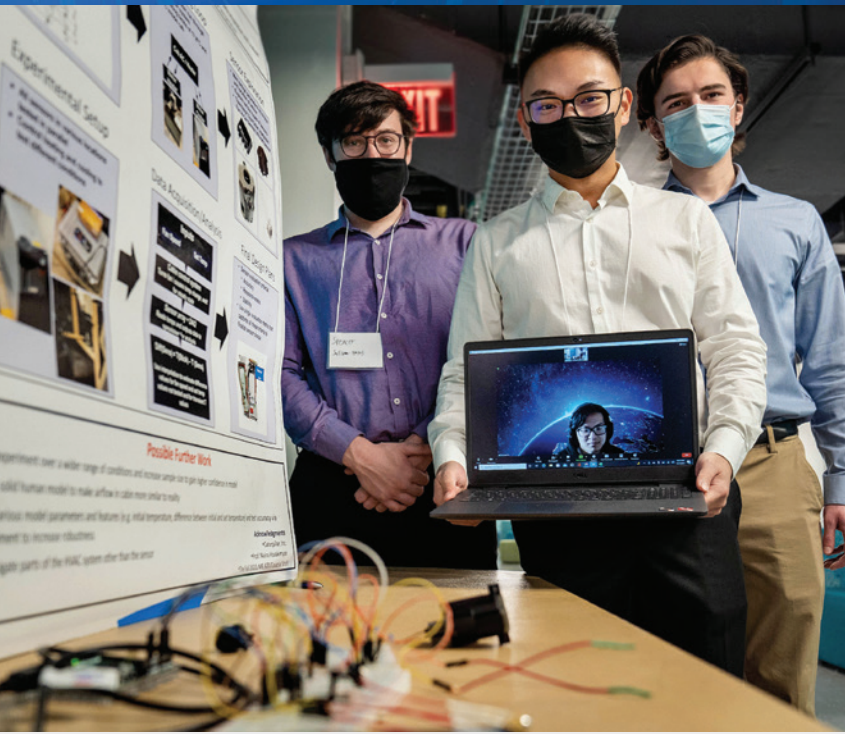


SCAN ME

mechse.illinois.edu/LuMEBgiving

"This building is an architectural gem and a beautiful addition to our Urbana-Champaign campus."

- Dr. Timothy Killeen, President of the University of Illinois System



▲ The final exhibitions and presentations for the Fall 2021 senior capstone design class were held in the newly finished Sidney Lu Mechanical Engineering Building. “A lot of labs and projects in other classes are typically very strict and very specific in what you have to do,” said **Kamil Skibinski**, who worked on a project for Collins Aerospace. “This project had recommendations and guidelines that our sponsor gave us, but we had a lot of freedom in choosing how we wanted to proceed and what experiments we wanted to do.”



◀ Two MechSE students received 2021 scholarships from the Society of Women Engineers. Sophomore **Ximena Castillo** (left) won the GE Women’s Network Scholarship. On campus, Castillo is involved in the UIUC chapter of the Society of Hispanic Professional Engineers (SHPE), has served as the Outreach and Communications Lead, and as a Coaching Lead. Senior **Isha Tyle** (right) won the Intel SWE Scholarship. Tyle encourages student activism and outreach activities for future generations of women engineers. She has held leadership positions with SWE, ASME, WiM, EOH, GLOBE, and T&M.

▶ **Justin Kao**, a junior studying mechanical engineering at Illinois, was honored with an Astronaut Scholar award by the Astronaut Scholarship Foundation. Founded in 1984 by the Mercury 7 astronauts, the foundation has provided more than \$5 million in scholarship money to over 600 students. Kao, one of 60 students chosen this year, recently completed a co-op at NASA, where he primarily worked on low-technology readiness applications, ensuring that the new technology they were developing enabled safer battery systems for human-rated spacecraft.



▲ A group of UIUC students joined students from Rutgers University for two weeks in West Virginia, rebuilding a bridge severely damaged during a period of extensive flooding in 2016. “There were seven families that were impacted by the construction of the bridge,” said **Lauren Horvath** (front), a MechSE student who was the project manager on the site and is the current president of the Engineers in Action Bridge Program. “Of the community members we talked with, a lot of them mentioned feeling unsafe crossing the bridge and feared one day it would collapse under them.”

Credit: Mike Glasgow

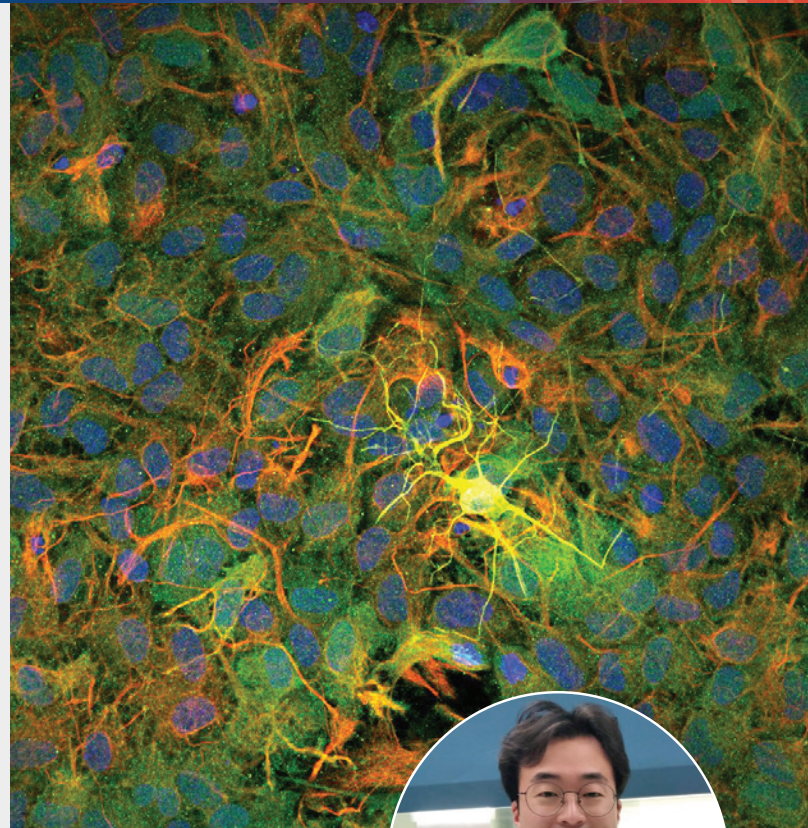


▲ **Kennedy Berschel** was always in love with soccer. So much so that Berschel would say she “wanted to major in soccer” when she was younger. While she isn’t majoring in soccer on paper, Berschel proudly plays for the Illinois women’s soccer team while pursuing a bachelor’s degree in mechanical engineering. Berschel is involved with Engineering Ambassadors, which teaches its members to educate others about what engineering is. Her dream is to play pro soccer if the opportunity arises. Otherwise, she has always loved the idea of being an engineer at Disney.

▼ Each of the ME 370 Design I teams spent the semester designing and building walking robots, utilizing the Lu MEB’s Innovation Studio to manufacture their parts. Students had access to 3D printers as well as laser-cutters to cut acrylic. Using the knowledge learned in lecture, they were able to create mechanical systems to move their walkers. “All of these engineers are going to get jobs where their reliability is important for society, so this is a great lesson in variability, tolerancing, and design of experiments for optimization,” said teaching assistant professor **Bruce Flachsart**.



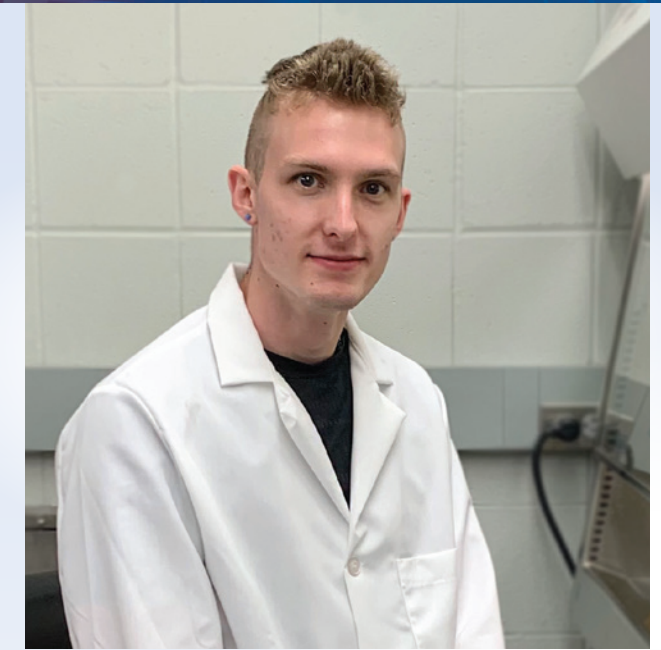
▼ **Megan Glaeser** is in the Master of Engineering in Mechanical Engineering program's "Energy" track, which consists of classes directly in line with her passion and career. "I get to pick classes that will help me with my job while also giving me a much deeper understanding of energy in both a theoretical and practical sense. It's really satisfying to be able to directly apply concepts from the classroom to the real world," she said. Glaeser is employed with Chicago-based Burns & McDonnell, an engineering consulting company that provides engineering, design, and construction management services to clients.



▲ **Ki Yun Lee** was awarded third place in the 2021 Image of Research Competition for his submission "A Neuron Cannot Shine Without Astrocytes." Lee studies biomechanics with Professor **Taher Saif**, focusing on the correlation between exercise and cognitive health *in vitro*. He takes media from exercising muscle tissue, which is like blood samples from living animals in *in vivo* model cases, and then observes functional and morphological changes to determine if neuronal activity increases. By taking pictures of the specimens he can compare the neuronal activity and understand the mechanism behind it. One of these pictures, shown here, was his competition submission.



▲ MechSE graduate students **Charul Chadha** (pictured), **Sameer Mohammed**, **Tejaswin Parthasarathy**, and **Nabil Ramlawi** have been named Mavis Future Faculty Fellows (MF3) for the 2021-22 academic year. The MF3 Academy was developed in The Grainger College of Engineering to help prepare talented graduate students for their future transition into academia. The program focuses on research, teaching, and mentoring, offering professional development activities and workshops, significant teaching experience, and mentorship of a less experienced student.



▲ Twenty-one graduate students from UIUC have been offered Graduate Research Fellowships from the National Science Foundation. MechSE was well represented with three fellowship winners: **William Cartwright Drennan** (pictured), **Valeria Saro-Cortes**, and **Reid Dukes Smith**. The NSF-GRF is one of the nation's premiere fellowships for graduate students. Fellowships support students pursuing research-based master's and doctoral degrees in the sciences, engineering, and social sciences.

▶ **Bashar Emon** was one of four Illinois students who recently received a Cancer Center at Illinois (CCIL) Graduate Cancer Scholarship to pursue cancer research projects under the mentorship of CCIL scientists. For Emon, a PhD candidate in theoretical and applied mechanics, the CCIL scholarship will fund a project to study the simultaneous biophysical and biochemical cellular interactions in 3D cancer models. He will continue his studies in tumor stiffness and whether stimulation encourages growth production of cancer cells.



◀ **Irwin Loud** earned his bachelor's degree in mechanical engineering in 2021 and stayed at Illinois for two major reasons. He wanted to continue exploring the work he began as a sophomore when he studied abroad in Japan, conducting research on electrochemical systems. And, after running for both the cross country and the track and field team as an undergrad, he still had a year of eligibility remaining, so he is continuing to compete on the Illini track and field team. His interests post-graduation are in finding eco-friendly methods of energy storage and usage.



◀ **Neil Chiruvella** elected to combine his last semester of undergrad with his first semester of the Master of Engineering in Mechanical Engineering program, which allowed him the freedom to take the classes he wanted while helping him decide whether to pursue a PhD or enter industry. Chiruvella is now an engineer at a Hawthorne, California-based aerospace startup, and plans to take one class each semester until he graduates with his M.Eng.ME degree. "It allows me to target my job search at extremely competitive positions without fear of being overlooked due to 'inexperience,'" he said.

Recent Research in the News

Inspired by water-absorbing plant roots, a **new material could power soft robots and create better medical implants**. Shelby Hutchens shows how in a paper published in *Matter*.

Ning Wang discovered that **mechanical forces can directly stretch chromatin** (the packed DNA and genome in the cell nucleus) to rapidly activate multiple genes simultaneously, highlighting the potential of force and mechanics to diagnose, treat, and cure some complex diseases.

A **new photonic chip for isolating light may be key to miniaturizing quantum devices**. Gaurav Bahl designed a simple, compact photonic circuit that uses sound waves to rein in light.

Nenad Miljkovic and colleagues found a way to make a **new ultrathin, self-healing, water-resistant surface coating** that survives scratches and dings and has a nearly endless list of potential applications.

The U.S. Department of Energy awarded Sanjiv Sinha and colleagues at UIUC funding for one of 44 projects across the country that focus on **new energy-efficient building technologies**.

Coral reefs provide many benefits to society. However, their rapid decline around the world has significantly reduced those benefits. With a new NSF grant, Amy Wagoner Johnson and Gabriel Juarez are **working to promote coral larval settlement for increased survival**.

Gaurav Bahl used mechanical actuation of a system of optical resonators to **produce a synthetic Hall effect** that had not previously been observed for any electromagnetic wave. The research was published in *APL Photonics*.

New software developed by Bill King **improves the accuracy of mass-produced 3D-printed parts**, reducing cost and waste for companies using additive manufacturing in factories around the world.

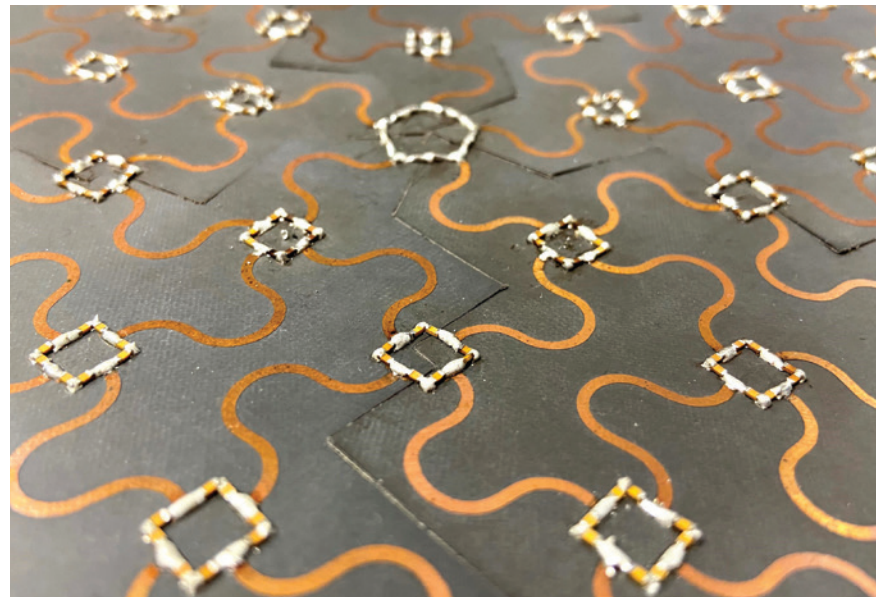
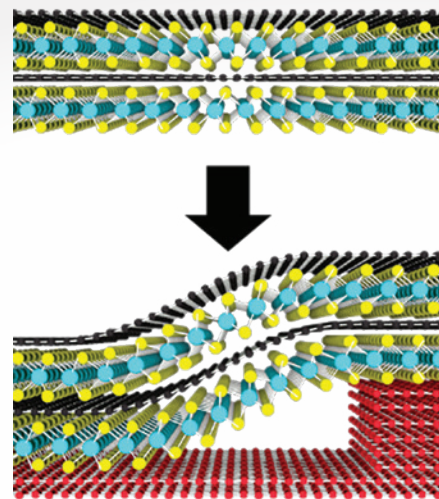


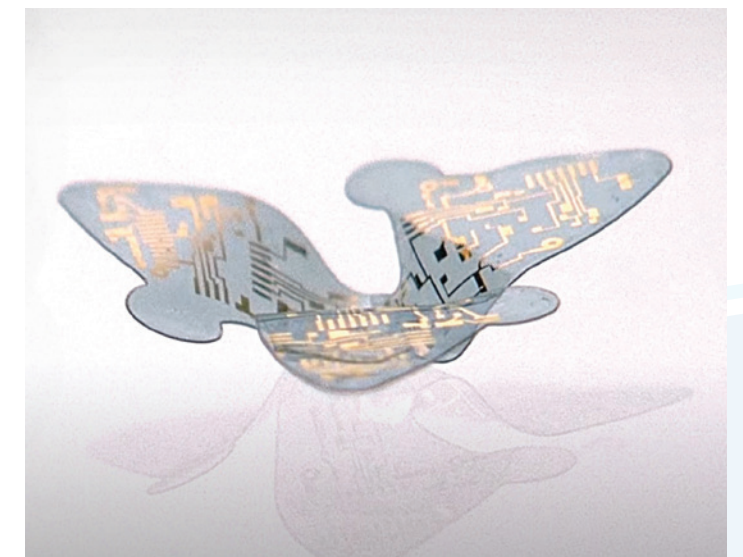
Photo of a metamaterial composed of a pattern of resonators. The defect appears as a pentagon in an otherwise regular array of circuit elements. (Credit: Kit Peterson)

A new study from Elif Ertekin and Arend van der Zande demonstrates how to create ultra-soft 2D structures that lay the groundwork for the **miniaturization of technology to the nanoscale**. Many next-generation technologies, from wearable or stretchable electronics and mechanically reconfigurable quantum systems, to mobile microbots, require electronic materials that can bend and flex out of their original shape while maintaining functionality. “If we want to make a device that can change shape like natural cells do, we need electronic devices that really compete with nature in terms of deformability and reconfigurability,” the researchers said.

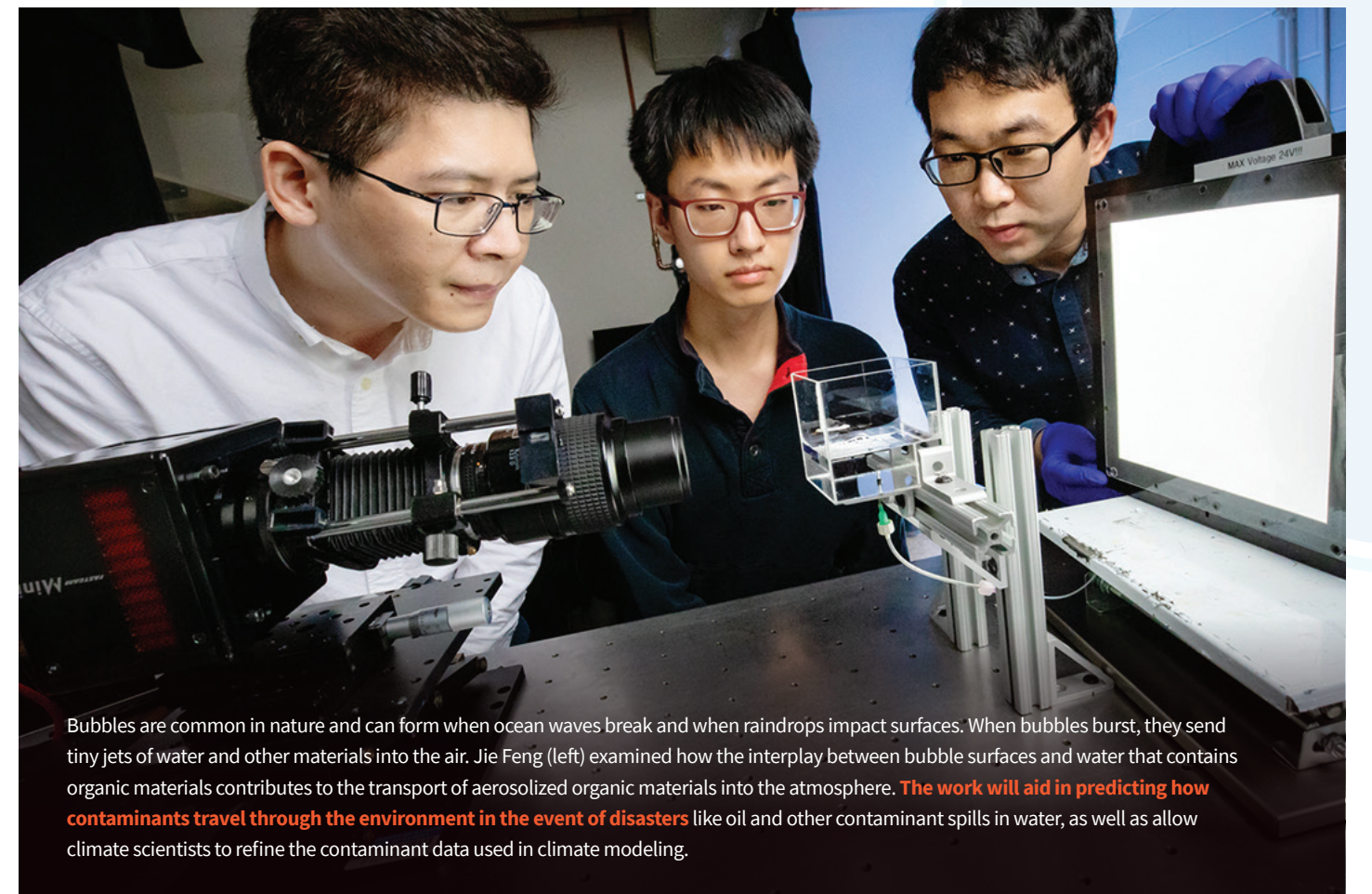


A four-layer stack of graphene (black) and MoS₂ (cyan and yellow) bends as it conforms over a hexagonal BN step (red).

Real-world materials are usually messier than the idealized scenarios found in textbooks. Imperfections can add complications and even limit a material’s usefulness. To get around this, scientists routinely strive to remove defects and dirt entirely, pushing materials closer to perfection. However, research from Gaurav Bahl and colleagues, published in *Nature*, found that **defects in materials may in fact help scientists** understand the exotic physics of topology. With this discovery, the team created a practical and systematic approach for exploring the topology of unconventional materials.



A team of researchers including Leo Chamorro developed the **smallest-ever human-made flying microchip** (or “microflier”). With no motor or engine, it catches flight on the wind and spins like a helicopter through the air toward the ground. It can be packed with ultra-miniaturized technology, like sensors, power sources, antennas for wireless communication and embedded memory to store data—making it ideal for monitoring air pollution and airborne disease. Their work was published in *Nature*.



Bubbles are common in nature and can form when ocean waves break and when raindrops impact surfaces. When bubbles burst, they send tiny jets of water and other materials into the air. Jie Feng (left) examined how the interplay between bubble surfaces and water that contains organic materials contributes to the transport of aerosolized organic materials into the atmosphere. **The work will aid in predicting how contaminants travel through the environment in the event of disasters** like oil and other contaminant spills in water, as well as allow climate scientists to refine the contaminant data used in climate modeling.

With \$1.5M in funding from the DOE, **Leonardo Chamorro** is leading an interdisciplinary team that will engineer, evaluate, test, and optimize **bioinspired** sandwich-like layered composite systems for use in marine and riverine turbines. Also, with a collaborator from the University of Sao Paulo, Chamorro is working on a project that aims to uncover the unsteady dynamics of perforated, flexible structures for **aerodynamics applications**.

Harry Dankowicz was named **NSF Program Director** for the Dynamics, Control and System Diagnostics (DCSD) Program at NSF, where he will oversee long-range planning and budget development, manage merit review of funding awards, and encourage bold, cross-cutting projects in the field. He will maintain his faculty position and research team in MechSE and return to campus upon completion of his time with the NSF.

Elif Ertekin is co-PI of the **Institute for Data Driven Dynamical Design (ID4)**, one of five new Harnessing Data Revolution Institutes funded through a \$75 million investment by the NSF to enable new modes

of data-driven discovery that allow fundamental questions to be asked and answered at the frontiers of science and engineering. She was also named an **associate editor** of the *Journal of Applied Physics*.

A paper published last year by **Randy Ewoldt** and colleagues won the Journal of Rheology 2021 Publication Award, which recognizes the **best paper published** in the journal during the preceding two years. Ewoldt also won MechSE's 2021 Two-Year **Alumni Effective Teaching Award**, voted on by former undergraduates of the department. He also won the 2021 **Dean's Award** for Excellence in Research from The Grainger College of Engineering.

Bruce Flachsbarth won MechSE's 2021 Five-Year **Alumni Effective Teaching Award**, voted on by former undergraduates of the department.

Jiajun He was named a 2021-22 Levenick iSEE **Teaching Sustainability Fellow**, awarded by the campus' Institute for Sustainability, Energy, and Environment (iSEE). He will incorporate sustainability into a new course, "Carbon Capture and Storage."

Sascha Hilgenfeldt and colleagues **discovered how DNA molecules self-organize** into adhesive patches between particles in response to assembly instructions – offering a “proof of concept” for an innovative way to produce materials with a well-defined connectivity between the particles. His work was published in PNAS.

Elizabeth Hsiao-Weckler is the **2021-2022 President** of the American Society of Biomechanics (ASB).

Iwona Jasiuk joined the Carle Illinois College of Medicine as a **Health Innovation Professor**.

Mariana Kersh joined the Carle Illinois College of Medicine as a **Health Innovation Professor**.

William King was named a **Fellow of the Institute of Electrical and Electronics Engineers**, an honor given to less than .1% of IEEE members. King also recently developed **new software tools** that enable the design of 3D-printed heat exchangers that are significantly different and better than conventional designs. The work, alongside Nenad Miljkovic, was published in the journal *Joule*. In July 2021, King's company, Fast Radius, Inc. announced its intention to become a **publicly listed company** through a merger with ECP Environmental Growth Opportunities Corp. (ECP), a publicly traded company. Fast Radius will raise \$435M to fund its growth and investments. The transaction values the company at \$1.4B.

Recent work from **Seid Koric** on artificial intelligence confluence was recently highlighted by *Advances in Engineering*, which disseminates results of excellent scientific and engineering research throughout the world. He and colleagues had **developed a new deep learning model** based on a sophisticated convolutional neural network (CNN) that predicts optimal metamaterial designs. Koric also delivered **keynote presentations** at two virtual European supercomputing events, focusing on the necessity of high-performance computing in the healthcare, automotive, agriculture, aerospace, financial services, insurance, government services, and other industries.

Tonghun Lee won a highly competitive **Department of Defense grant** to use state-of-the-art laser and optical diagnostics to probe the complex physicochemical dynamics that occur inside scramjet engines, and to provide high-fidelity data that can lead to novel ways of modeling scramjets.

Leon Liebenberg won the 2021 **Rose Award for Teaching Excellence** from The Grainger College of Engineering. Liebenberg also founded and coordinated a **Student Sustainability Competition** for Undergraduates that attracted 193 students from across campus. Called “Reimagine our Future,” the eight-week competition challenged students to generate ideas that promote one or more of the United Nations' Sustainable Development Goals (SDGs).

The 2021 issue of *Combustion Theory and Modelling* was specially dedicated to **Moshe Matalon**, the Editor-in-Chief of the journal, on the occasion of his 70th birthday.

Nenad Miljkovic won the 2021 **Early Career Award** from the ASME Electronic and Photonic Packaging Division (EPPD). Miljkovic also recently **developed new software tools** that enable the design of 3D-printed heat exchangers that are significantly different and better than conventional designs. The work, alongside William King, was published in the journal *Joule*. Miljkovic was also named the 2021 winner of the **Bergles-Rohsenow Young Investigator Award in Heat Transfer** from ASME, which recognizes a young engineer who has contributed significantly to the study of heat transfer. Additionally, his flight proposal was one of just two that the **NASA Physical Sciences Research Program** selected to conduct experiments on the International Space Station using a new flow boiling module for the Flow Boiling and Condensation Experiment (FBCE) in support of in-space cryogenic propellant tank transfer research.

Martin Ostojic-Starzewski presented a **keynote lecture** at the 24th International Conference on Medical Image Computing and Computer Assisted Intervention.

Mike Philpott's company, aPriori Technologies—the leading provider of digital manufacturing software featuring design for manufacturability (DFM) and



Katie Matlack won a **2021 NSF CAREER Award** for her project, “Controlling Nonlinear Wave Propagation in Metastructures with Contact Interfaces.” Matlack also received the 2021 Journal of Applied Mechanics Award for one of her papers. The award is given by ASME to honor the best paper published in the *Journal of Applied Mechanics* during the preceding two years.

cost (DTC) solutions—completed a **Series D investment round of \$30M**, bringing the company's valuation to \$280M.

Joao Ramos won a **2021 NSF CAREER grant** for his project “Telecomotion of humanoid robots via bilateral feedback and intent prediction.”

Taher Saif is leading “FORce Control of Cancer Tumor μ Environment (FORCE),” one of nine interdisciplinary research teams selected for the **Cancer Center at Illinois (CCIL)** annual seed grant awards. Additionally, Saif, who has been a leading researcher on **cloth mask performance**, weighed in on the topic of double masking with the *Boston Globe*.

Huseyin Sehitoglu won the 2022 **TMS Morris Cohen Award** for his career contributions to the study of materials. He also received **two NSF grants**; the first will support his work on generation of slip in shape memory alloys, and the second one will fund

the mechanics of fatigue in high entropy alloys. Sehitoglu also won the 2021 **Tau Beta Pi Daniel C. Drucker Eminent Faculty Award** from The Grainger College of Engineering.

Chenhui Shao won the 2021 **Chao & Trigger Young Manufacturing Engineer Award**, which recognizes a young manufacturing researcher under 40. Shao was also recognized for his early-career technical

contributions to manufacturing and design with the 2021 **Outstanding Young Investigator Award** from the Institute of Industrial and Systems Engineers Manufacturing & Design Division (IISE M&D). Shao is also the PI on a new NSF-sponsored **digital manufacturing project** aiming to push forward research involving biological tissue research.

Sanjiv Sinha won the 2021 **Stanley H. Pierce Faculty Award** from the student-run Engineering Council in The Grainger College of Engineering.

Arend van der Zande was named, for the third time, to the 2021 **Clarivate Analytics Highly Cited Researchers** list. He also won the 2021 **Dean's Award for Excellence in Research** from The Grainger College of Engineering.

Matt West was named a Grainger College of Engineering **William H. Severns Faculty Scholar** for his significant contributions to engineering education.



Naira Hovakimyan presented a TEDx Talk in December 2021 on the hidden cost of resistance to innovation in science.

In Memoriam:

Professor Emeritus **Arthur Peter “Art” Boresi**, who served for decades on the TAM faculty, died February 15, 2021, at age 96 in Laramie, Wyoming. Boresi was also a professor emeritus of civil and architectural engineering at the University of Wyoming, Laramie.

MechSE Professor Emeritus **Charles Edwin Taylor**—known to everyone as Chuck—died December 18, 2017, in Gainesville, Florida, at age 93.

Professor Emeritus **Carl S. Larson** passed away on January 10, 2021. He was also a three-time MechSE alumnus (BSME '56, MSME '58, PhDME '65) and a 2003 Distinguished Alumnus.



Ashley Armstrong (PhD ME '20) and her younger sister Sarah (left) have turned their ongoing health journeys into a sustainable, shareable lifestyle. The sisters recently cofounded Angel Acres, a 22-acre farm in Marcellus, Michigan, that will use agrotourism to educate visitors and the public about regenerative agriculture. "Nature thrives on biodiversity," Armstrong said. "The idea behind regenerative agriculture is to create a more resilient planet and healthier humans by promoting soil health."

Asha Balakrishnan (BSME '97), a research staff member at the Institute for Defense Analyses, has been chosen to serve on National Oceanic and Atmospheric Administration's Advisory Committee on Commercial Remote Sensing for the next two years.

Eric Brown (BSME '98, MSTAM '01, PhDTAM '03) was elected as a 2021 Fellow of the American Physical Society.

Jill Bruning (BSME '81) has been named president of the intelligence, system engineering, security, services and solutions strategic business unit at Amentum.

Dan Caruso (BSME '86) received an Alumni Award for Distinguished Service by The Grainger College of Engineering. He is the Founding CEO and Chairman of Zayo Group, which completed its IPO in 2014.

Omowale Casselle (BSME '02) was named the inaugural Pritzker Director of Tech Talent Labs at The Discovery Partners Institute.

Dar-Lon Chang (BSME '98, PhDME '03) lives in a special neighborhood, called Geos Neighborhood, that is an all-electric, solar-powered community in Arvada, Colorado. A new developer appears to have alternate plans, leading to Chang and the Geos Neighborhood being featured in a 2021 CNN story.

Bob Coverdill (BSME '83, MSME '85) has been named chief operating officer of Ag Air Imaging and AirScout, companies that together provide crop scouting services for Champaign-area farmers.

Carl Garrison (BSME '06) was recognized as a rising star by *Progressive Railroading*. He is the assistant vice president, mechanical, at Union Pacific Railroad.

Laura Gerstner (BSME '05) works in research and development investment at CNH Industrial and was recently featured in a recent episode of the Society for Women Engineers' *Diverse* podcast.

In Memoriam:

Raymond Viskanta (BSME '55) passed away on December 27, 2021 in West Lafayette, Indiana. Dr. Viskanta was a Distinguished Alumnus in MechSE and a world-renowned researcher in the field of heat transfer and a long-time mechanical engineering professor at Purdue University.

Crystal Gwynn (MSME '01) has been named team manager for the Cummins Rocky Mount Tech Center, where she manages the implementation of new programs and products, offering end-to-end product support.

Pilwon Hur (PhDME '10) is heading a promising study from the Gwangju Institute of Science and Technology (GIST) in Korea centered on treating children's cerebral palsy through hippotherapy, which uses horse riding to improve functional mobility in children with CP.

Neel Kashkari (BSME '95, MSME '98) received an Alumni Award for Distinguished Service by The Grainger College of Engineering. He is the President and Chief Executive Officer of the Federal Reserve Bank of Minneapolis.

Michael Kessler (MSTAM '98, PhDTAM '02), a MechSE alumni board member and the dean of the North Dakota State University College of Engineering, has been named a fellow of the National Academy of Inventors.

Anthony Levenda (BSME '09) was named the new Director of the Center of Climate Action and Sustainability at The Evergreen State College in Olympia, Washington.

Noah Manring (MSTAM '93) has been announced as the new dean of the College of Engineering at the University of Missouri.

Michael Middleton (BSME '93) was named as the new site manager for the Corpus Christi manufacturing complex of LyondellBasell, one of the world's largest plastics, chemical, and refining companies.

Rakesh Sachdev (MSME '81) has been elected to serve as a director on the board Herc Holdings Inc., a leading North American equipment rental supplier operating through Herc Rentals Inc.

Scott Sandschafer (BSME '96) was named CEO of Calibo, a digital platform and product company.

Lorenzo M. Smith (BSME '91) has been named provost and executive vice president of Stephen F. Austin State University in Nacogdoches, Texas.

Jeff Spencer (BSME '91) was named president of Bird-X, an Elmhurst-based bird and wildlife control company.

Michael Sutton (PhDTAM '81), a University of South Carolina distinguished professor, was awarded the Society of Engineering Science's Engineering Science Medal for his "pioneering contributions" to the fields of experimental solid mechanics and materials characterization through his creation of digital image correlation technology.

Jonathan Tran (MSTAM '06, PhDME '10) was a featured guest on NPR, where he discussed his research into how mimicking lobster shell patterns could lead to stronger concrete.

Melonee Wise (BSME '04, MSME '06) is now vice president of robotics automation at Zebra Technologies. Fetch Robotics, the company founded by Wise, was acquired by Zebra in 2021 for \$290M.

Zaya Younan (BSME '85) continues to make his mark in the global real estate industry. His company, Younan Properties, acquired a boutique portfolio of executive office buildings in Thousand Oaks, CA.

Jeanne Yu (BSME '84) has joined Xeriant, Inc., a new aerospace technology holding company, as Senior Advisor on its Board of Advisors.

Alumni Awards

Distinguished Alumni Award

P. Barry Butler (PhD ME '84) has been named a recipient of MechSE's 2021 Distinguished Alumni Award. He has served as president of Embry-Riddle Aeronautical University since 2017.

Li San Poh (BSME '98) was named a 2021 recipient of the MechSE Distinguished Alumni Award. Li San currently serves as Vice President of Changi Airport Group, the managing and operating company of the award-winning, world-class aviation hub Singapore Changi Airport.

Outstanding Young Alumni Award

Sean Hopkins (BSME '11) was named a 2021 MechSE Outstanding Young Alumni in MechSE. He works as a quality engineer for SRAM, a manufacturer of innovative bicycle components, including Grip Shift.

Dani Tene (BSME '15) was named a 2021 Outstanding Young Alumni in MechSE. She has worked for Microsoft in a variety of jobs varying from operations to manufacturing, to her current role in mechanical design.



Taylor Tucker (BSEM '17) became a published children's book author. "Jenny Saves a Convertible" takes readers through the main character's efforts, with her grandfather's help, to restore the engine of an old car—explaining, in simple terms, for a young audience, the mechanical process of an engine.

**Department of Mechanical Science
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