

Mechanical Engineering

FROM THE CHAIR / Spring 2022

Dear colleagues and friends,

As we approach the end of the quarter, I am eager to share with you the exciting new advances in research and the wide range of accolades that our faculty and students have received during the past six months.

Our faculty continue to be leaders in their respective fields and have been recognized nationally and globally with prestigious honors and awards. Foremost, Professor **Jian Cao** has been elected to the National Academy of Engineering (NAE) for her pioneering research and leadership in manufacturing. As a department, we are very proud that five faculty members have been elected to the NAE in the past five years. In solid mechanics, Professor **Yonggang Huang** has been named a Global 'Highly Cited Researcher' multiple years in a row. In robotics, Professor **Kevin Lynch** has been awarded the IEEE Robotics and Automation Leadership Award for his pioneering contributions to the study of robotic manipulation. In fluid mechanics, Professor **Richard Lueptow** received the Dow Particle Processing Recognition Award from AIChE for his work over the past decade on granular flow and segregation. Lastly, in design, Professor **Elizabeth Gerber** received the SIGCHI Social Impact Award for her contributions to addressing socio-economic challenges, and I received the Engineering Science Medal for contributions to design under uncertainty.

Congratulations also go to Professor **Ryan Truby**, the double winner of the Air Force Office of Scientific Research and Office of Naval Research Young Investigator Awards that support his research at the intersection of multifunctional materials, manufacturing, and robotics; and Senior Lecturer **Michael Beltran**, the winner of the Charles Deering McCormick Distinguished Lecturer award, the top teaching award that the University bestows.

In addition to these achievements, I am delighted to share the new ME brochure, which reveals the department's research and educational **Strategic Priorities**. In outlining these priorities, the document represents our vision of how mechanical engineering can make a lasting societal impact.

I hope you enjoy reading this newsletter about our most recent activities and wish you all a wonderful summer ahead!



Wei Chen
Wilson-Cook Professor in Engineering Design
Professor and Chair
Department of Mechanical Engineering
McCormick School of Engineering

Cao Elected to National Academy of Engineering



One of 111 new members announced by the NAE, Professor **Jian Cao** was selected for her work pioneering a flexible sheet forming system and for her leadership in manufacturing.

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Truby Earns Two Young Investigator Awards

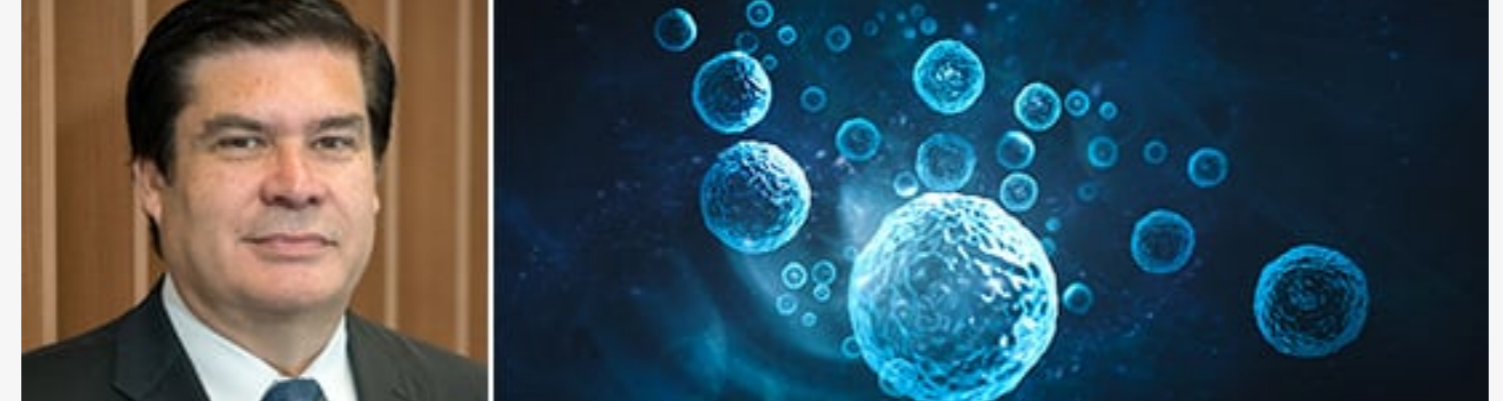


Professor **Ryan Truby** will receive \$510,000 over three years to develop new artificial muscles via an **Office of Naval Research Young Investigator Award**, and a three-year, \$450,000 **Air Force Young Investigator Research Program Award** to support his research at the intersection of multifunctional materials, manufacturing, and robotics.

[Read about the Naval Research Award »](#)

[Read about the Air Force Award »](#)

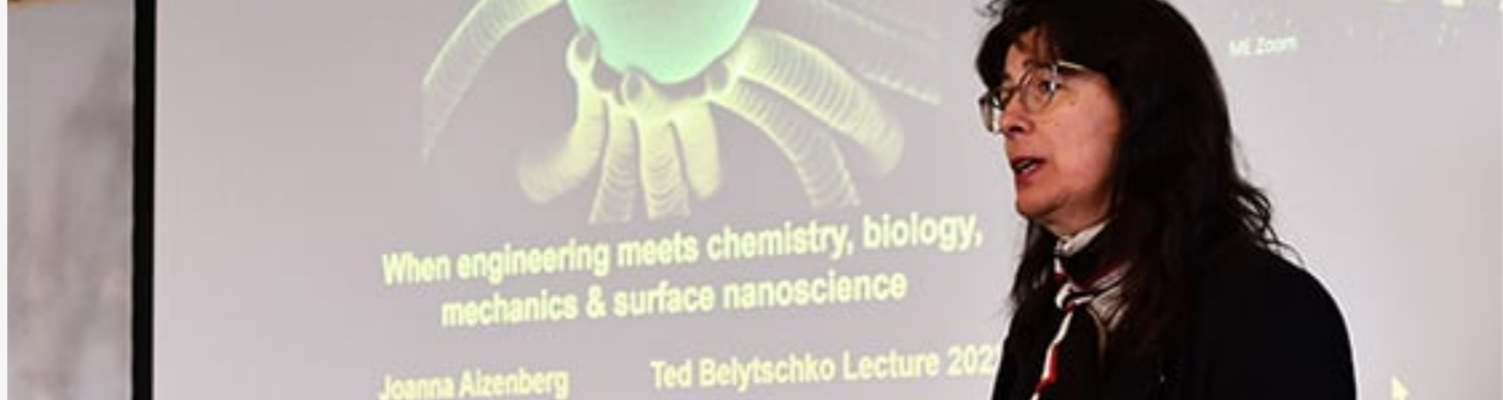
Leveraging AI to Work with Cells



Professor **Horacio Espinosa** led a team of researchers in moving medical science closer to personalized care by developing a new approach using artificial intelligence to more efficiently engineer stem cells.

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Belytschko Lecture Explores Mechanics of Responsive Materials



The lecture, established in 2013 to honor Professor **Ted Belytschko**, featured a presentation from Harvard's Joanna Aizenberg. [Watch the event](#)

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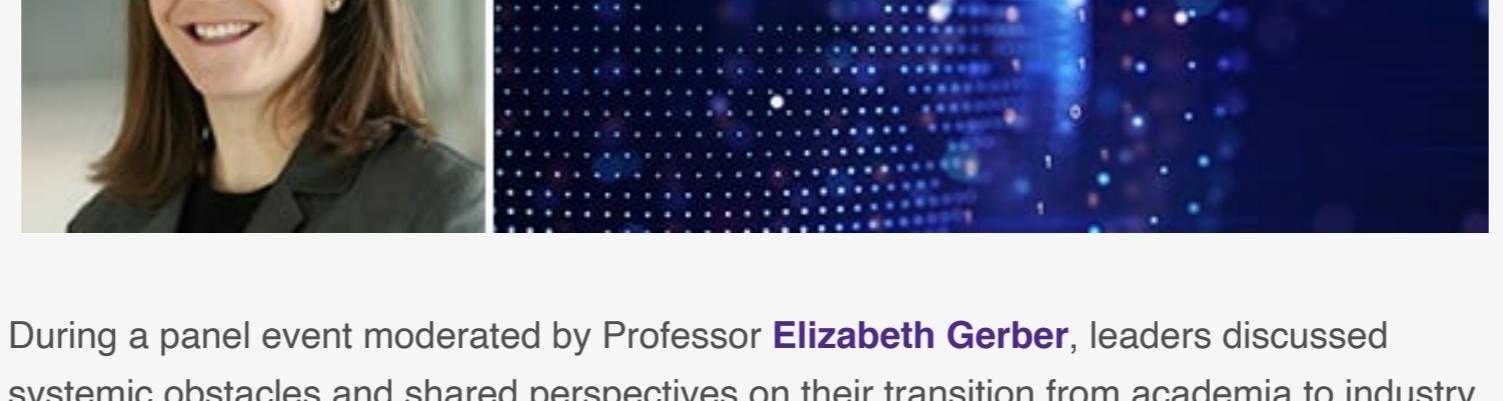
Textbook Introduces Students to Mechanistic Data Science



Coauthored by Professor **Wing K. Liu**, Assistant Research Professor **Zhengtao Gan**, and Adjunct Professor **Mark Fleming**, *Mechanistic Data Science for STEM Education and Applications* introduces a structured methodology for combining data science tools with mathematical scientific principles to solve intractable problems.

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Tackling the Grand Challenges in Human Computer Interaction + Design



During a panel event moderated by Professor **Elizabeth Gerber**, leaders discussed systemic obstacles and shared perspectives on their transition from academia to industry. [VIDEO](#)

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Northwestern Launches Fluid Dynamics Research Hub Website



Fluid dynamics work at Northwestern impacts research from cells to galaxies. Discover the fluid dynamics research areas at Northwestern and the departments, centers, and programs that conduct this research.

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Moderna Cofounder Robert Langer Recalls “Inauspicious” Beginning to Distinguished Career



Hosted in part by the Department of Mechanical Engineering, Langer spoke at the 2022 Elsevier Distinguished Lecture on April 18. [VIDEO](#)

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Faculty News



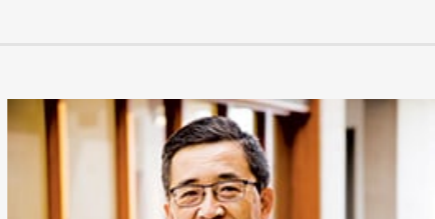
Lynch Receives Leadership Award from IEEE Robotics and Automation Society

Given by the IEEE/RSJ International Conference on Intelligent Robots and Systems, the award recognizes **Kevin Lynch**'s pioneering contributions to the study of robotic manipulation.



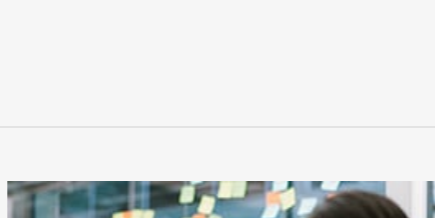
Chen Selected for 2022 Engineering Science Medal

Wei Chen was chosen for her seminal contributions to design under uncertainty, in particular for establishing formalism and developing robust design methods to accelerate the use of physics-based simulations.



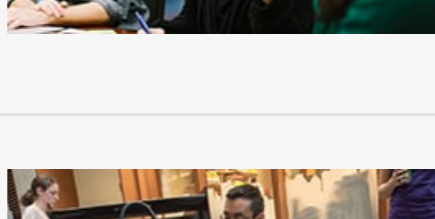
Huang Named Among Global 'Highly Cited Researchers'

Yonggang Huang was named on the annual list that identifies researchers who demonstrated significant influence through the publication of multiple highly cited papers during the last decade.



Gerber Receives SIGCHI Social Impact Award

Elizabeth Gerber was cited for her contributions to addressing socio-economic challenges.



Beltran Honored with University Teaching Award

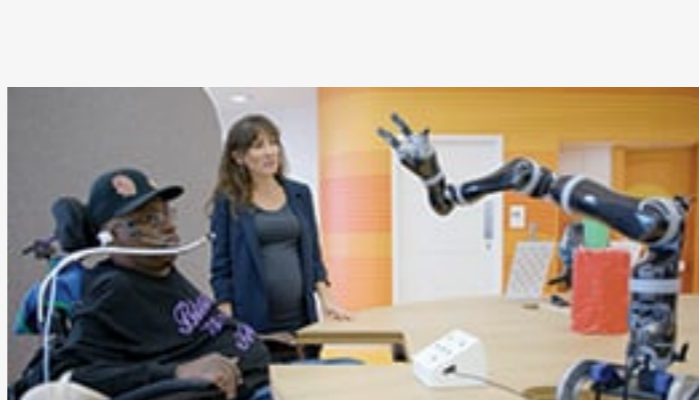
Michael Beltran was one of five University faculty members recognized for demonstrating excellence and innovation in undergraduate teaching.



Lueptow Receives Dow Particle Processing Recognition Award

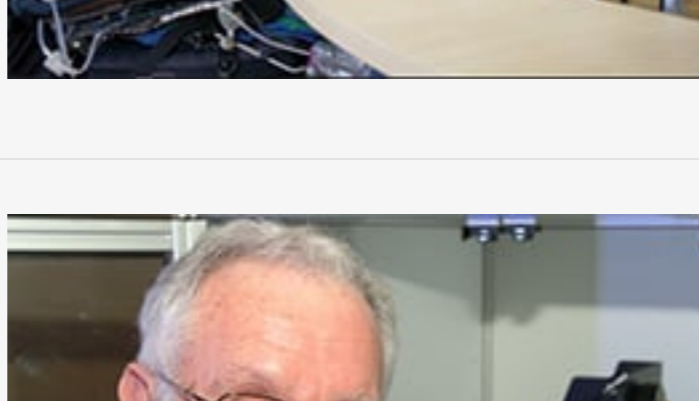
Richard Lueptow was honored by the American Institute of Chemical Engineers for work over the past decade on granular flow and segregation.

About Northwestern Mechanical Engineering



Department Announces New Strategic Priorities

Northwestern Mechanical Engineering aims to integrate mechanical sciences, computation, and design to shape the future through new department education and research priorities.



New Fellowship to Honor Leon M. Keer

The fund will be used to provide financial assistance to doctoral-level mechanical engineering graduate students.

Adding a New Minor

Mechanical engineering students are participating in the new **Data Science and Engineering Minor** offered at Northwestern. The program provides students with practical knowledge fundamental to the data science lifecycle.

Students will gain experience with a variety of data models and techniques used for collecting data, cleaning it, and analyzing it.

"I decided to take the DSE minor because I believe a strong grasp of data science is becoming increasingly important across almost all fields," ME student **Peter Tuchler** ('23) said. "I really like that the DSE minor follows the entire data pipeline, from acquisition to analysis. I also think the Python and SQL programming languages are very helpful tools, and the DSE minor teaches them well."

The minor is jointly offered by the Department of Industrial Engineering and Management Sciences and the Department of Computer Science.

STUDENT NEWS

PhD student **Jannat Ahmed** received a 2022 Society of Tribologists and Lubrication Engineers (STLE) Chicago Student Scholarship Award. She also delivered an invited talk at a meeting of the Detroit STLE chapter. Ahmed also won Base Oil & Lubers Connect's Future Star 2022 Award.

Aaron Huang ('24) was part of **Team engiUnity**, which earned third place honors at the DOE Solar Decathlon for its design concept of a multifamily development.

Ian Shi ('23) is working as a battery manufacturing engineering intern at Tesla. He also completed an internship at SpaceX working on Starlink solar manufacturing.

FACTS & FIGURES

1/3 Faculty with joint department appointments	8 National Academy of Engineering members	8 Editors-in-chief of international research journals
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