

Materials Science and Engineering

FROM THE CHAIR / Spring 2022

Dear friends,

As the academic year draws to a close, we celebrate the many achievements of our faculty, students, alumni, and the success of the department. The 39th Hilliard Symposium and MSE Awards Banquet took place on May 19, and we were delighted to celebrate both events in-person. Many thanks to our dedicated staff who made this possible. Notably, Distinguished Career Achievement Awardee **Masahiro (Mike) Meshii** was among the first few PhD students to graduate from our department and became a long-time distinguished member of our faculty. The entire Meshii family was on-hand to celebrate Mike's career achievements with us. We were also delighted to honor **Bryce Meridig** for his many contributions to the materials community. You can read more about the event below.

I am very pleased to announce that **Cécile Chazot** will be joining the department in January 2023 as the Julia R. Weertman Professor of Materials Science and Engineering. Prior to her recently completed PhD work at MIT, Cécile worked for companies in the US, United Kingdom, and France. Her work lies at the interface of polymer chemistry, mechanical engineering, photonics, and fiber-based materials, and aims to promote sustainability in polymer and textile manufacturing. Cécile also strives to fuse educational initiatives with innovation in materials and manufacturing, and she has led many outreach initiatives.

Our department is blessed with faculty who are at the very forefront of their fields. This, along with our strong community spirit, allows Northwestern MSE to stand out. A shining example is **David Seidman**, who's made a major impact on the department since joining in 1985, from the founding of NUCAPT to his pioneering materials research, exemplary mentoring of his students and postdocs, and service to the department. I am delighted to report that David will continue his outstanding materials research as a Professor Emeritus of Materials Science and Engineering starting in September. We are looking forward to many interactions with David in the future.

Despite the challenges of the past two years, our research effort remains very strong with no decline due to COVID-19. Over this time, we have been active in examining issues related to diversity, equity, inclusion, and belonging, and we are grateful to Dow for sponsoring the first DEI award to recognize student efforts in those areas. In September, we will welcome a PhD class of 37 students that is 50 percent male and 50 percent female. We appreciate the efforts and successes of our graduate and undergraduate students alike, who are engaged in the life of the department and the recipients of many awards and fellowships.

We look forward to an exciting summer and to hearing from you in the future. Please visit if you are in the Chicago area.



Peter W. Voorhees
Frank C. Engelhart Professor and Chair
Department of Materials Science and Engineering
McCormick School of Engineering

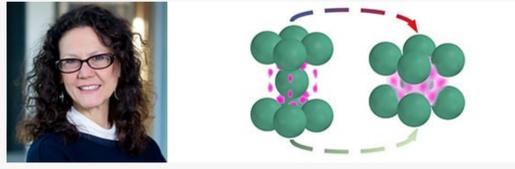
Atomic-scale Analysis of Nacre Leads to New Insights about Calcium Carbonate



The work by Professor **Vinayak Dravid** and Research Assistant Professor **Xiaobing Hu** provides insight into the formation of defects in calcium carbonate with aragonite structure, and could lead to new ways to shore up cracks across diverse length-scales.

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Helping Develop Superionic Materials for Safe, Efficient Batteries



Researchers led by Professor **Monica Olvera de la Cruz** observed a classical system that exhibits a transition between insulating and conducting states, work that could support the development of safe solid-state batteries.

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Winged Microchip is Smallest-ever Human-made Flying Structure



The size of a grain of sand, dispersed microfliers developed by Professor **John Rogers** could monitor air pollution, airborne disease, and environmental contamination. **VIDEO**

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The Case for Onboard Carbon Dioxide Capture on Long-range Vehicles



A new method developed by Professor **Scott Barnett** to make ships carbon neutral can be implemented based on existing technologies.

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Northwestern University Plans Multimillion-Dollar Technology Accelerator



The collaborative space will provide a home for Northwestern's highly entrepreneurial faculty, including Professors **Mark Hersam** and **John Rogers**, to contribute to innovation through commercialization of sophisticated scientific discoveries, and will bring economic growth and opportunities to the Evanston and Chicago communities.

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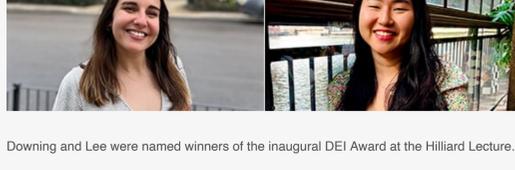
MSE Hosts 39th Annual John E. Hilliard Lecture and Symposium



Named for late Professor John E. Hilliard, the symposium is the department's annual capstone event, highlighting its senior graduate students' original research.

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PhD Candidates Julia R. Downing, Sieun Ruth Lee Honored for DEI Efforts



Downing and Lee were named winners of the inaugural DEI Award at the Hilliard Lecture.

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FACULTY NEWS

Scott Barnett was selected as the winner of the **2022 High Temperature Energy, Materials, and Processes Division Outstanding Achievement Award** by the Electrochemical Society.

Jian Cao was elected to the **National Academy of Engineering**.

Tobin Marks was elected to the **American Philosophical Society**.

Ian McCue received a **NASA Early Career Faculty Award**.

Professor Emeritus **Masahiro (Mike) Meshii** was the Distinguished Achievement awardee at the annual MSE Awards banquet, following the Hilliard Symposium.

Chad Mirkin received the **International Precious Metals Institute Junichiro Tanaka Distinguished Achievement Award** for his work in the field of supramolecular chemistry and nanoparticle synthesis using precious metals.

John Rogers was honored by the National Academy of Sciences with the **James Prize in Science and Technology**, and also received the **Washington Award**.

Samuel Stupp earned the **Hirschmann Award in Peptide Chemistry**. Stupp was also elected to two academies: the **Academy of Sciences of Latin America**, and the **National Academy of Sciences of Costa Rica**.

Ryan Truby received the **Air Force Young Investigator Research Program Award**, and an **Office of Naval Research's Young Investigator Program Award**.

STUDENT NEWS

Mohammed A. Bin Rusayyis was a finalist for the 2022 Eastman Chemical Student Award in Applied Polymer Science from the American Chemical Society. Rusayyis will be speaking in the half-day finalist symposium at the August 2022 National ACS Meeting.

Matthew Bland ('22) won the McCormick School of Engineering-wide Gotaas Award for excellence in undergraduate research.

PhD students **Jessica Chiu**, **Alessandro Pereyra**, and **Mitchell James Walker**; and undergraduate students **Matthew Phillip Bland** and **Christian Milton Williams** won Graduate Research Fellowships from the National Science Foundation.

PhD student **Timothy Cote** earned an Argonne Fellowship.

PhD student **Gwen Depolo** earned the Teaching Assistant Award.

The department's student awards were handed out during the John E. Hilliard Symposium held May 19. Undergraduate winners were **Simona Fine** (Hilliard Award for Leadership, Scholarship, Service), **Jacob Mack** (Hilliard Award for Research and Design), and **Rohan Luthra** (Meister Summer Research Award). **Davy Zeng** was named Outstanding Junior, and Outstanding Sophomore honors went to **Levi Hoogendoorn**.

PhD candidate **Jennifer Glerum** earned an Air Force Research Laboratory Fellowship.

PhD candidate **Haiyue Huang** received the Young Researcher Award from the European Materials Research Society.

PhD candidate **Stephanie Ribet** earned a 3M Fellowship. Ribet also earned a Ryan Fellowship, along with **Doruk Cezan** and **Donghoon Shin**.

PhD student **Lauren Walters** earned the Weertman Fellowship.

ALUMNI NEWS

Blythe G. Clark ('01) is now senior manager of materials engineering and manufacturing science and technology at Sandia National Laboratories.

Carolyn Duran (PhD '98) is now vice president and engineering manager of process engineering and external partnerships in components research at Intel Corporation. She is also serving her term as president of the Materials Research Society.

Dan Grozea (PhD '00) received the Agnes Kaneko Citizenship Award from the University of Toronto Engineering Faculty mission.

Murat Guvendiren (PhD '07), assistant professor at the New Jersey Institute of Technology, received the school's 2022 Rising Star Research Award.

Michele Manuel (PhD '07), professor at the University of Florida, was elected to the National Academy of Engineering.

Bryce Meridig (PhD '12), chief science officer at Citrine Informatics and a Stanford University faculty member, was the Early Career Achievement awardee at the annual MSE Awards banquet, following the Hilliard Symposium

Joanna Millunchick (PhD '95) moved to Indiana University and was appointed dean of the Lilly School of Informatics, Computing, and Engineering.

McKinley Kinard Paul ('20) and **Naomi Ayaka Pieczulewski** ('21) won Graduate Research Fellowships from the National Science Foundation. Pieczulewski is now at Cornell University, while Paul is studying at the Georgia Institute of Technology.

Kelsey Stoerzinger ('10), assistant professor of chemical engineering at Oregon State University, has been granted an Early Career award from the US Department of Energy to develop a deeper understanding of electrochemical processes used to convert nitrate into ammonia. She won an NSF Early Career Award in 2021.

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