

FROM THE CHAIR / Fall 2022

Dear friends and colleagues,

The hot summer months have faded in memory and fall has arrived. Students and faculty have returned to Cook Hall. It is wonderful to experience the excitement and bustle of students, postdocs, and faculty running to and from classes, and engaging in discussions that make our research programs so strong.

There have been many exciting and impactful events since I last wrote. Sossina Haile is leading a new Department of Energy Frontier Research Center that employs the unique ways that hydrogen influences the properties of materials. The center will focus on materials discovery and design to develop materials for carbon-neutral energy production and for electrochemical-based computing. After many postponements during the COVID-19 pandemic, the Northwestern-Tel Aviv University workshop took place in Tel Aviv this summer with a focus on advanced materials for future infrastructure. Many faculty from MSE participated and developed new or cemented deeper collaborations with colleagues at Tel Aviv University. To introduce high school students to the excitement of materials research, MSE graduate-students created and led the Northwestern University Research Program for High Schoolers, which engaged students from the Chicago Math and Science Academy this summer. It was a great success, and we are looking forward to another program this coming summer. More information on these and other highlights is below.

Fall brings many transitions. Cécile Chazot, our new assistant professor, has arrived on campus, and we have initiated two faculty searches, one for an assistant professor and the other for an assistant professor of instruction. We also welcomed Marilyn Hall as the new MSE department business administrator, and wish long-time employees, Boe Welter and Alice Camacho, the best with their new positions at Northwestern. A new cadre of PhD and MS students have arrived on campus increasing our total graduate student enrollment to nearly 250 students.

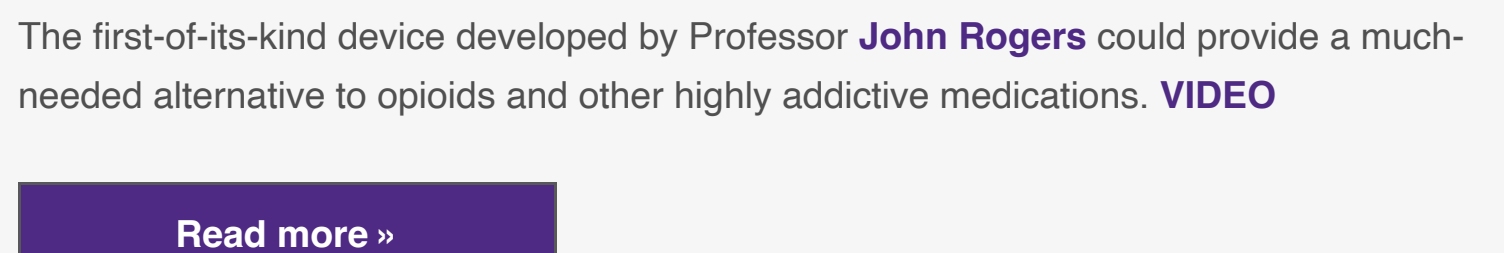
While there are many changes, one thing remains constant, our focus on interdisciplinary collaborative research at the forefront of materials science and engineering.

Please stay in touch and consider visiting if you should be in the Chicagoland area. I look forward to hearing from you.



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

Dissolving Implantable Device Relieves Pain without Drugs



The first-of-its-kind device developed by Professor **John Rogers** could provide a much-needed alternative to opioids and other highly addictive medications. **VIDEO**

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Northwestern Takes Part in Workshop with Tel Aviv University



The event was cochaired by Professor Emeritus **David Seidman**, and is part of a collaboration with the Israeli university.

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Northwestern Receives \$10 Million for New National Energy Research Center



The research team led by Professor **Sossina Haile** will work to provide a scientific foundation for practical developments in carbon-neutral energy and materials for brain-inspired computing.

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Photosynthesis-inspired Process Makes Commodity Chemicals



Professor **Samuel Stupp** used light and water to convert acetylene into ethylene, a widely used, highly valuable chemical that is a key ingredient in plastics.

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Tire Dumps and Aging Mattresses May Soon Be Relics of the Past



Professor **John Torkelson** used simple chemistry to address long-standing barriers associated with recycling about a quarter of today's plastics. **VIDEO**

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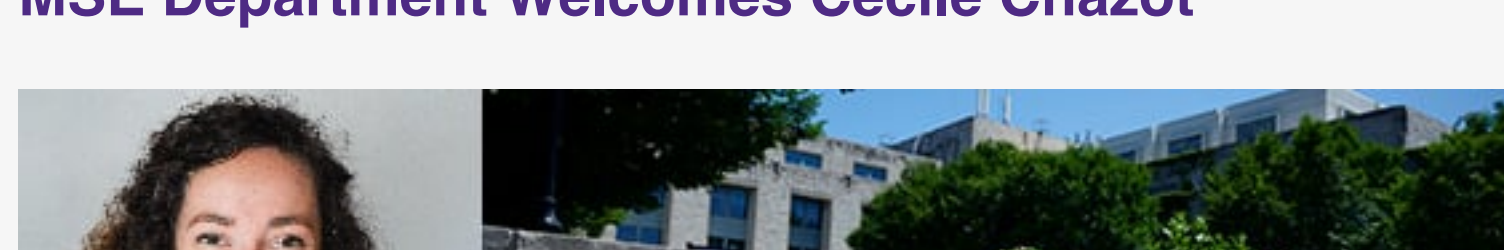
Mussels' Underwater Glue Inspires Synthetic Cement



Using a novel technique, Professor **Nathan Gianneschi** built synthetic polymers inspired by mussels' sticky adhesive that were even stronger than the material it mimicked.

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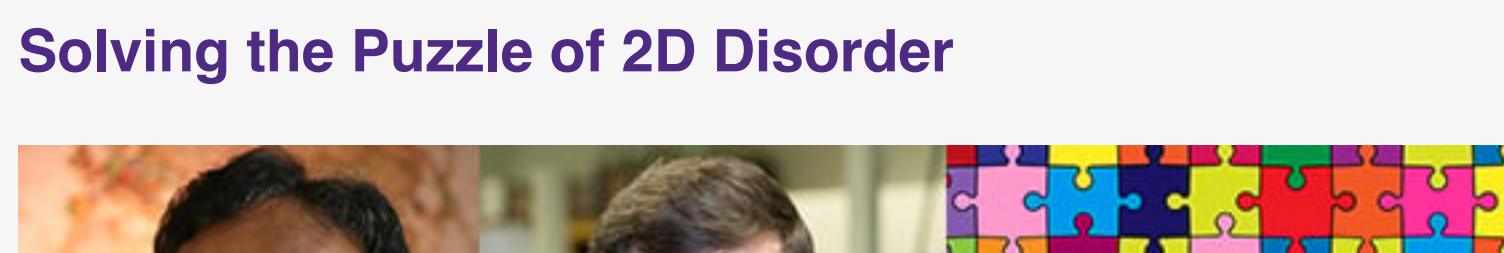
MSE Department Welcomes Cecile Chazot



Starting in January, Chazot will be the Julia Weertman Professor in Materials Science and Engineering.

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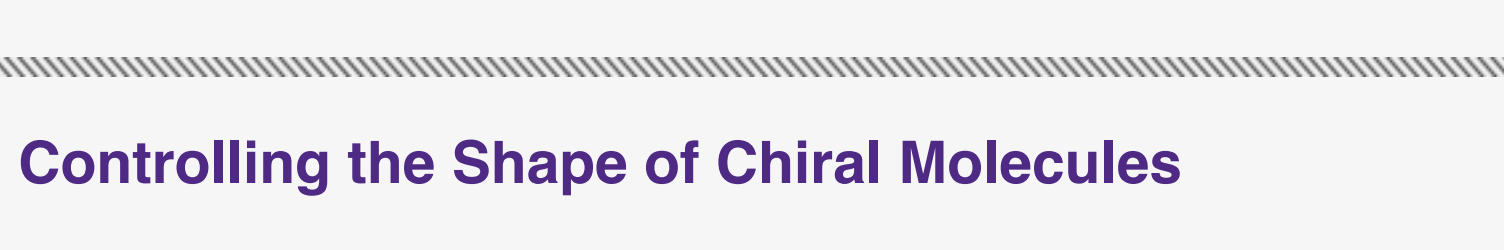
Solving the Puzzle of 2D Disorder



An interdisciplinary team including Professors **Vinayak Dvaid** and **Mark Hersam** developed a new method to characterize disorder in 2D materials, which is crucial to understanding and improving their performance.

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Controlling the Shape of Chiral Molecules



The work from Professors **Michael Bedzyk** and **Monica Olvera de la Cruz** analyzed how to organize the molecules into bigger units and has implications in drug delivery and nanoelectronics.

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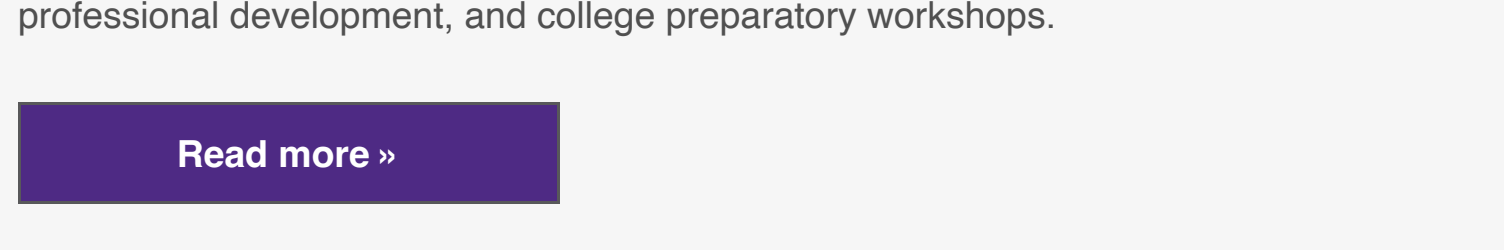
NURPH Shows High Schoolers Top-Level Science



High schoolers **Ahmed Abukar**, **Warda Aftab**, and **Andrew Green** had the opportunity to perform research in MSE laboratories and participate in materials science tutorials, professional development, and college preparatory workshops.

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Dunand Project Receives DOE Funding to Reduce Industrial Emissions



The project led by Professor **David Dunand** is receiving \$500,000 from the DOE's Advanced Manufacturing Office.

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Career Opportunities

Northwestern Materials Science and Engineering invites applications to fill two faculty positions.

**Tenure-Track Assistant Professor in Materials Science and Engineering**  
The successful candidate will be responsible for carrying out research, the teaching, and service while building a vibrant research program that contributes to the department's mission and is committed to supporting diversity, equity, and a community of inclusion.

**Assistant Professor of Instruction (Non-Tenure)**  
The successful candidate will teach and develop undergraduate and graduate classes. Responsibilities could also include mentoring and advising students, developing approaches to improve student learning and persistence, and performing other administrative duties as required.

FACULTY NEWS

**Yip-Wah Chung** was voted Teacher of the Year in 2021-2022 for teaching "Mat\_Sci 408: Phase Transformations in Materials."

**Mercouri Kanatzidis** was chosen Laureate of the Global Energy Prize 2022 for his work on halide perovskite-based materials enabling a new generation of solar cells.

**Samuel Stupp** was named the recipient of the **2022 Von Hippel Award by the Materials Research Society** for pioneering contributions to the development and understanding of a broad range of molecularly designed supramolecular soft materials that function as bioactive scaffolds in regenerative medicine, matrices for photocatalytic activity, and stimuli-responsive robotic structures.

ALUMNI NEWS

**Jennifer Andrew** (02) was promoted to professor of materials science and engineering at the University of Florida.

**Lesley Chow** (PhD '09) received the Interdisciplinary Research Excellence Award from the Rossin College of Engineering and Applied Science at Lehigh University. Chow was also recently promoted to associate professor.

**Jamie Heisserer** ('03) is now deputy director, Division of Operating Reactor Licensing in Nuclear Reactor Regulation at the U.S. Nuclear Regulatory Commission.

**Deep Jariwala** (PhD '15), assistant professor in the Department of Electrical and Systems Engineering at the University of Pennsylvania, was awarded the 2022 Young Scientist Prize in Semiconductors from the International Union of Pure and Applied Physics. Along with colleagues at Penn, Jariwala also won the 2022 Nokia Bell Labs Prize.

**Boran Ma** (PhD '20) will begin a new faculty position in the School of Polymer Science and Engineering at the University of Southern Mississippi in January.

**Laura Minkerimi** (PhD '94) now vice president, 3D semiconductor portfolio and technology of Adeia, appeared on the Times Square NASDAQ billboard as her spin-out company Adeia rang the closing bell.

**Rick Schneider** (PhD '89) is now senior director, Raxium Development at Google. In 2017, Schneider cofounded Raxium, which demonstrated monolithic integration of ultra-bright, micron-scale InGaN RGB LEDs in dense arrays. The company was acquired by Google this year.

**Grace Jinliu Wang** (PhD '01) was moving the 17th president of Worcester Polytechnic Institute, starting early in 2023. Wang is appointed to WPI from her inaugural role as executive vice president for research, innovation, and knowledge at Ohio State University.

STUDENT NEWS

**Mohammed A. Bin Rusayyis** (advised by John Torkelson) won the 2022 Eastman Chemical Student Award in Applied Polymer Science.

**Donghoon Shin** was named teaching assistant of the year for 2021-22. Shin was nominated by both students and faculty for his contributions as a TA to both "Mat\_Sci 331: Soft Materials" and "Mat\_Sci 332: Mechanical Behavior of Solids."

**Beata Szydłowska**, an MSE postdoc (Hersam group) received the 2022 Benjamin Walter Fellowship from the German Science Foundation.

FACTS & FIGURES

<p><b>20+</b> National Academy memberships</p>	<p><b>7</b> Highly cited researchers by Clarivate Analytics</p>	<p><b>13</b> Affiliated research centers and institutes</p>
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