

# UC Berkeley Materials Science & Engineering

## Fall 2025 Newsletter

Dear students, faculty, staff, alumni, friends and prospective students,

As I begin my third year as Chair of the Department of Materials Science and Engineering (MSE), I am filled once again with gratitude for your support and inspired by the excellence, creativity, and community spirit that define Berkeley MSE.

Our department continues to thrive. This year, we proudly retained our No. 2 national ranking for undergraduate program in the latest U.S. News & World Report, underscoring our leadership in materials education and research. More broadly, UC Berkeley was recognized once again as the No. 1 public university in the nation, and Berkeley Engineering remains among the very top engineering schools.

We are also celebrating remarkable milestones across our community. Prof. Kristin Persson was elected to the National Academy of Engineering and continues to lead the world-renowned Materials Project. Prof. Robert Ritchie was elected to the National Academy of Sciences. Prof. Mark Asta, our colleague and former department chair, is now serving as Interim Dean of Engineering — a proud moment of visibility for materials science within the College. Meanwhile, our Chancellor, Richard Lyons, has completed his first year of service, guiding Berkeley into a new era of innovation and impact. Most notably, Prof. Omar Yaghi — jointly appointed in MSE and Chemistry — has been awarded the 2025 Nobel Prize in Chemistry for his pioneering invention of metal-organic framework materials! He is one of four Nobel laureates tied to Berkeley this year — a record in Nobel history for any university.

Over the past year, we have also deepened our sense of community and strengthened our programs. On September 6, we hosted our second annual MSE Alumni Day, which brought together more than 70 alumni spanning five decades of graduates. The event highlighted the enduring power of our alumni network — as both a source of inspiration for our students and a vital partner in our continued growth. We also welcome Prof. Scott McCormack to our faculty, expanding our expertise in ceramics and extreme-environment materials, and we are actively recruiting new faculty in the areas of materials for sustainability and AI for materials research.

This past academic year, we celebrated the graduation of 25 undergraduates, 65 master's students, and 29 Ph.D. students — and welcomed a new cohort of talented students who will carry forward the Berkeley MSE legacy. Today, our department includes more than 330 students, supported by 26 faculty (core and joint), one lecturer, and six dedicated staff members. This includes our new Department manager, Ms. Amanda Okamoto.

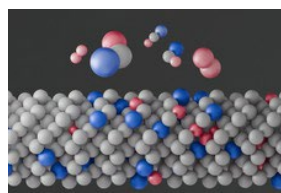
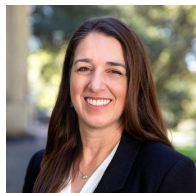
Our research impact remains exceptional. With more than \$1 million per faculty member in annual research expenditures, MSE continues to lead within Berkeley Engineering. This year has brought remarkable breakthroughs across the spectrum of MSE research, including metals, polymers, semiconductors, oxides, and innovations in materials computation and characterization. Looking ahead, we plan to lay the foundation for a Center for AI in Materials Discovery, positioning Berkeley at the forefront of integrating artificial intelligence into the future of materials research.

As we embark on the 2025–2026 academic year, I look forward to working with all of you — students, colleagues, alumni, and friends — to continue building a community that is both intellectually vibrant and deeply supportive. Together, we will write the next chapter of Berkeley MSE's legacy.

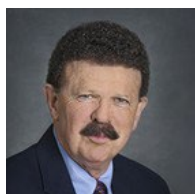
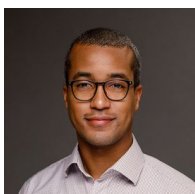


Prof. Junqiao Wu,  
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- The MSE department is delighted to welcome **Prof. Scott McCormack** as an **Assistant Professor**, effective January 1, 2026. Prof. McCormack is an expert in materials under extreme environments, crystallography, thermodynamics, and materials synthesis. He joins MSE through the College of Engineering's Aerospace Engineering Cluster Hire and brings a set of much-needed expertise that will significantly strengthen both our department and UC Berkeley.
- **Prof. Kevin Healy** group has developed a microphysiological system for screening lipid nanoparticle–mRNA complexes predicts in vivo heart transfection efficacy. This work was published in *Nature Biomedical Engineering*.
- The MSE department hosted **Prof. Katherine Faber**, Simon Ramo Professor of Materials Science at Caltech, as the PPG Lecturer on October 23, 2025. The **PPG Foundation Lectureship** for Materials Innovation and Service Excellence is awarded to distinguished professors who exemplify exceptional commitment to promoting diversity, overcoming personal and professional challenges, providing outstanding mentorship, and making significant contributions to society.
- The MSE Department welcomes new **Department manager, Ms. Amanda Okamoto!**
- **Prof. Omar Yaghi** shares the **2025 Nobel Prize in Chemistry!** Yaghi is a professor of chemistry with a joint appointment in MSE. He created a field called reticular chemistry, which involves stitching together molecular building blocks to form porous structures — metal-organic frameworks (MOFs) — with myriad applications.
- **Prof. Omar Yaghi** has been selected as the recipient of the **2025 Von Hippel Award**, the highest honor awarded by the Materials Research Society (MRS). This recognition honors Professor Yaghi's founding of Reticular Chemistry and his groundbreaking development of metal-organic frameworks and covalent organic frameworks (COFs) — crystalline materials with ultra-high porosity and tunable structures.
- In a recent paper published in *Science*, **Prof. Andrew Minor**'s group used energy-filtered scanning nano electron diffraction (4D-STEM) to uniquely identify short range ordering motifs in GeSiSn. This publication represents the first direct evidence of short-range ordering in a semiconductor material, an exciting new area for exploration in the field of microelectronics.
- **Prof. Haimei Zheng**'s group has used electron microscopy to review new methods to make exotic metal alloys. Published in *Nature*, Prof. Zheng and team have discovered a new way to produce these materials, called high-entropy alloys (HEAs), at near-room temperatures.
- **Berkeley MSE is ranked No. 2** undergraduate program in U.S. News. In addition, Berkeley Engineering remains No. 3 overall in the U.S., and UC Berkeley has reclaimed its standing as the No. 1 public university!
- On September 6, 2025, the MSE Department welcomed distinguished alumni back to the Hearst Memorial Mining Building for our second **MSE Alumni Day!** More than 70 alumni — from graduates of the 1970s to those who completed their degrees just last year — joined the celebration.
- In a recent work published in *Nature Materials*, **Prof. Jungqiao Wu**'s group developed in-memory sensors that mimic neurons. The “memsensor” mimics *Caenorhabditis elegans* chemosensory plasticity to guide a miniature boat for adaptive chemotaxis, illustrating low-power aquatic neurorobotics with fewer memory units. This breakthrough could pave the way for simpler, more energy-efficient sensors and adaptive robots capable of operating in complex environments.



- **Professor-in-Residence Digby Macdonald** passed away. Prof. Macdonald was appointed Professor of Residence in the Departments of Materials Science and Engineering and Nuclear Engineering at UC Berkeley in 2012.
- A team led by **Prof. Rayne Zheng** has developed a new AI-driven method for the fully automated design of engineering materials with complex physical behaviors. The approach enables the inverse design of metamaterials for advanced functionalities such as energy absorption and sound cancellation. Notably, the AI model also accounts for processing-related defects, offering more robust and manufacturable solutions. This work is also featured on the front cover of ***Nature Machine Intelligence***.
- **Prof. Zakaria Al Balushi** is awarded the **2025 Schieber Prize** by the International Organization for Crystal Growth for his seminal contributions to interfacial crystallization of low-dimensional materials.
- The US Department of Energy Office of Science features **Prof. Kristin Persson** as a recipient of the Office of Science **Distinguished Scientist Fellow Award**.
- **Prof. Robert Ritchie** is elected to the **National Academy of Sciences (NAS)**! He became one of the very few scholars who earned membership in both NAS and NAE (the National Academy of Engineering). Election to the National Academy is one of the highest honors in the scientific field. Members of the NAS serve as advisers to the nation and to the federal government on science, engineering, and medicine.
- **Prof. Phillip Messersmith** has been named a fellow of the **American Association for the Advancement of Science (AAAS)**, for his distinguished contributions to the field of bioinspired materials and adhesives, particularly for pioneering work on mussel-inspired adhesive materials for biomedical applications.
- **Prof. Chris Van de Walle** of UCSB delivered the **Dow Lecture** in MSE on nitride semiconductors. The Dow Lectureship for Research Excellence and Societal Impact was endowed by Dow Chemical Company in 2008 to highlight the critical role of materials science in advancing technologies that improve quality of life, such as in energy and sustainability. This prestigious lecture series features speakers who have received outstanding recognition in our field, showcasing groundbreaking research with broad technological and societal impact.
- **Prof. Kristin Persson** is elected to the **National Academy of Engineering (NAE)**! Election to the NAE is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to engineering practice, research or education. This includes pioneering new and developing fields of technology, major advancements in traditional fields of engineering, development/ implementation of innovative approaches to engineering education, or engineering leadership.
- A team led by **Prof. Jie Yao and Prof. Jungqiao Wu** has discovered anomalous thermal transport in Eshelby twisted van der Waals nanowires. The work highlights the critical role of dislocations in thermal conduction, providing fundamental insights for defect and strain engineering in advanced thermal applications. The work was published in ***Nature Materials***.
- On February 9, **Prof. Ting Xu** joined the post-screening discussion of Plastic People at Berkeley Art Museum and Pacific Film Archive (BAMPFA) as a materials expert. This event is part of the **Climate Journalism on Screen** film series.



# Student Awards and Recognitions

## 2024-2025

**Blumenkranz Fellowship:** Charles Chuxi Wen, Shankar Subramanian, Aidan Shiu, Rachel Lee and Tiffany Mok

**Corrosion Award:** Nathan Bieberdorf and Mackinzie Farnell

**Didier De Fontaine Student Award in Theory and Computation:** Luke Langford

**Departmental Citation Award:** William Dai

**Elaine Shen Award:** Audrey Turcotte, Junho Park, Amelyn Phan, Esha Goru and William Dai

**Gareth Thomas Award:** Pedro Paulo Paixao Olivera Borges

**Jane Lewis Fellowship:** Rohith Shrinivaas Mohanakrishnan and Sherrie Qian

**Jing Gui Award:** Mark Ma, Sanchay Gadia, Rachel Lee, Zehao He, Shilong Wang, Daphne Lucana, Iva Petrovic, Sijia Ke, Anthony Salazar, Ripeng Luo and Xu Huang

**MSE Graduate Student Equity and Inclusion Award:** Daphne Lucana and Anthony Salazar

**Outstanding GSI Award:** Pedro Paulo Paixao Olivera Borges and Nathan Bieberdorf

**Pask Memorial Award:** William Dai

**Ross Tucker Award:** Sijia Ke

**Vedensky Award:** Wenqing Wang and Ripeng Luo

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