

meet OUR NEW FACULTY

The arrival of new faculty members continues at the UC Santa Barbara College of Engineering, which has hired five more promising assistant professors and one full professor since the Spring 2023 issue of *Convergence* went to press. Three have already started, and the others are set to begin in January 2024.



MARLEY DEWEY

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After completing her postdoctoral fellowship at the University of Pittsburgh, Marley Dewey joined UCSB's new Bioengineering Department as an assistant professor. She earned her bachelor's degree in chemical engineering from the University of Maine and completed her doctoral studies in materials science and engineering at the University of Illinois Urbana-Champaign.

"I think it's exciting to be a part of something that's new, because you get to put in your own ideas and what you're passionate about," said Dewey, who is also eager to help build the department's graduate curriculum and culture.

Dewey's research spans the areas of human health and the environment, looking at how cellular signals may influence bone cancer and how to create biomaterials to improve and accelerate bone repair. The university's strength in engineering, culture of collaboration, and shared-use facilities were among the biggest reasons why she was thrilled to join the UCSB faculty.

"My research involves tissue engineering and regenerative medicine, which is why I'm extremely excited to be part of a top-tier university that has leading-edge research in materials, microbiology, and marine biology," said Dewey. "Interdisciplinary research helps professors like me because it offers other expertise. If there's a project that I want to get involved with and my lab doesn't have that particular expertise, another lab on campus does. And together, we can accomplish something that, apart, we would never be able to do."

In one of Dewey's interdisciplinary projects, based on the strong resemblance between bleached coral reefs and biomaterials she observed during her graduate-school research aimed at repairing bone, she is investigating whether "the principles we use to design materials for bone can be modeled to mimic the

composition of coral," making it possible to design biomaterials to repair dying coral reefs.

MARYAM MAJEDI **Computer Science**

The Computer Science Department welcomed Maryam Majedi as an assistant teaching professor in fall 2023. Prior to joining the UCSB faculty, she completed her postdoctoral work at the University of Toronto and was a senior lecturer of information technology at the University of Southern California. Majedi said that there were many reasons why she could not wait to start her new position.

"I am most grateful to have the opportunity to join a department that supports my research, features strong and knowledgeable faculty members, and attracts high-quality students who are eager to learn," said Majedi, who completed her PhD at the University of Calgary, working in the area of data privacy.

In her primary research, Majedi examines how to integrate ethics concepts into computer-science courses. She hopes to collaborate with other UCSB faculty to develop ethics modules covering key concepts, such as privacy, discrimination, bias, and fairness, and to expand those efforts by creating a cross-campus initiative aimed at making ethical considerations the cornerstone of education in an array of technology-focused disciplines.

"The idea is that when students graduate from our department, they will have a rich understanding of ethical matters that could arise from the design and development of their products," she explained. "I want to train students to be responsible technology developers who will help to build public trust in technology and, hopefully, become leaders in designing ethical and equitable technology."

DAHLIA MALKHI **Computer Science**

Dahlia Malkhi will join the Computer Science (CS) Department as a full professor in January 2024. Her research spans broad aspects

of the reliability and the security of distributed systems, with a focus on blockchains and advances in financial technology.

"I'm passionate about the two sides of technology: being part of the innovative product process and bringing real-world impact through these advancements," said Malkhi. "I've spent my career bringing these two worlds together, and I'm excited to carry this experience back into an academic setting."

Malkhi has spent two decades bringing scientific innovation to fruition, while establishing herself as a world expert in reliable and secure distributed systems. She has served as chief research officer and distinguished scientist at Chainlink Labs, chief technical officer of Diem Association, lead researcher at Novi Financial, partner/principal researcher at Microsoft Research, associate professor at The Hebrew University of Jerusalem, and senior researcher at AT&T Labs. In addition to co-founding VMware Research, she is also the co-inventor of HotStuff, a pioneer in blockchain design, and of Flexible Paxos, the technology behind Log Device.

Malkhi, who received her bachelor's, master's, and doctoral degrees in computer science from The Hebrew University of Jerusalem, says that she looks forward to returning to UCSB, which was the first campus she visited as a graduate student.

"Some of the faculty members in the department literally welcomed me as a graduate student during a visit about two decades ago, and now they're welcoming me as one of their colleagues. I look forward to collaborating with them and with everybody else," she said. "I love the culture of the department, and I am honored and thrilled to join the CS family at UCSB."

Malkhi has received numerous prestigious recognitions in her career, including the Outstanding Technical Achievement Award from the IEEE Computer Society's Technical Community on Distributed Processing and election as a fellow of the Association for Computing Machinery.



TYLER MEFFORD

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Chemical Engineering

After spending seven years in the Materials Science and Engineering Department at Stanford University, first as a postdoctoral scholar and then as a senior staff scientist, Tyler Mefford will join the UCSB Chemical Engineering Department in January 2024.

"I'm extremely excited," said Mefford, who earned his PhD in chemistry from The University of Texas at Austin and his bachelor's degree from Stanford. "UCSB has one of the strongest chemical engineering departments in the country, and I think that allows us to recruit and train some of the best students, who can then become leaders in the renewable-energy economy."

Mefford works in the field of electrochemistry, seeking a clean pathway to reducing greenhouse gas emissions in manufacturing, chemical production, and energy storage for the grid. Specifically, his work is focused on designing materials to improve electrochemical energy storage, and conversion technologies that utilize the low-cost electrons generated from renewable energy sources, such as solar and wind.

"Accelerating the transition to renewables requires an ability to store the energy to be used later on demand," he says, adding that he looks forward to being a part of UCSB's collaborative culture and partnering with faculty who work on catalysis, polymers, and electrochemical processes. "UCSB is not only home to some of the leading researchers in my field, but it also has some of the best facilities for characterizing materials, developing new materials, and enabling translatable and impactful solutions for renewable energy."



CAROLYN MILLS

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Bioengineering

Nearly ten years after completing a bachelor's degree in chemical engineering from UCSB, Carolyn Mills is returning to campus as an assistant professor in the Bioengineering Department. With an eye to an array of applications, she is interested in re-engineering biological systems at the molecular level to enable a more sustainable circular economy. That may include molecules that are used in vaccines and others involved in chemical transformations.

"I am happy to be able to come back to the place where my interest in research got its start," said Mills, who earned her PhD in chemical engineering from the Massachusetts Institute of Technology. "Research was never on my radar until I took a class as a sophomore with **Professor Scott Shell**, who encouraged us to spend the summer doing something to improve our resumes for our future career. He offered to write letters of recommendation, which eliminated big barriers for us to get involved. That was my first summer doing any research, and I haven't stopped since."

Mills recently completed her postdoctoral work at Northwestern University, where she became involved with a Diversity, Equity, and Inclusion Committee on campus, organizing an inaugural symposium to highlight the research accomplishments of those holding underrepresented identities in Northwestern's chemical engineering, chemistry, and materials-science research communities. She received the Chemical and Biological Engineering Department's Distinguished Postdoctoral Service Award for her efforts.

Mills looks forward to returning to UCSB's interdisciplinary environment in the new Bioengineering Department.

"Coming back to UCSB is a wonderful opportunity to give back to the College of Engineering and a community that gave so much to me," she said. "I am thrilled to be part of the world-class College of

Engineering and a department that I'm sure is going to be one of the best in the country."

QIAN YU

Electrical and Computer Engineering

Joining the faculty of UCSB's Electrical and Computer Engineering Department in July 2023 felt like a homecoming of sorts to new assistant professor Qian Yu. After receiving his bachelor's and master's degrees at the Massachusetts Institute of Technology, Yu earned his PhD in electrical and electronics engineering from the University of Southern California.

"I spent so many years in the area before coming to UCSB, and I already knew several faculty members here, so coming to UCSB was really like coming home," said Yu, who completed his postdoctoral research at Princeton University, where he worked on machine-learning theory. "I am proud to be part of such a well-regarded department and college, and I am looking forward to establishing collaborations with my new colleagues."

Yu works in the field of information theory, also known as the mathematical theory of communication, an area of research focused on data processing and measurement in the transmission of information in communication systems.

He primarily studies the fundamental limits of physical systems by developing new mathematical tools to improve the efficiency and accuracy of communication and computation designs. In his previous work, he contributed significantly to breakthroughs in coded computing to provide resiliency, security, and privacy in large-scale distributed systems.

"I established the first set of optimal error-correcting codes for computational tasks that went beyond linear computation," he explained. "They provided a rigorous and important theoretical foundation to analyze the optimality and effectiveness of general computing designs."



Scan to watch a video and hear why the new faculty are eager to join UCSB's College of Engineering.