UC SANTA BARBARA
THE Current

March 26, 2026
Harrison Tasoff

UCSB professors honored by the American Association for the Advancement of Science

Four professors at UC Santa Barbara have joined the esteemed ranks of the American Association for the Advancement of Science (AAAS). The organization has elected Kelly Caylor, Shelly Gable, David Morrison and Javier Read de Alaniz to its 2025 class of fellows.

AAAS was founded in 1848 to promote the development of science and engineering at the national level. Since 1874, the organization has recognized scientists, engineers and innovators for their achievements across disciplines — from research, teaching and technology; to administration in academia, industry and government; to excellence in communicating and interpreting science to the public.

“On behalf of UC Santa Barbara, I congratulate faculty members Kelly Caylor, Shelly Gable, David Morrison and Javier Read de Alaniz on their election as fellows of the American Association for the Advancement of Science, a prestigious honor recognizing extraordinary achievements by scientists and innovators across disciplines,” said Chancellor Dennis Assanis. “Cited for their work in atmospheric and hydrospheric sciences, psychology, math and chemistry, respectively, these four remarkable researchers have each advanced their fields of expertise and helped to further our university's reputation as a world leader for scientific impact."

Finding solutions in dry lands

“I am proud to be part of an organization that has spent nearly two centuries both advancing scientific discovery and ensuring that science serves the public good,” said Kelly Caylor, a professor at UCSB’s Bren School of Environmental Science & Management.

Caylor’s work combines ecology and hydrology to investigate how water shapes the dynamics of natural and managed landscapes. He’s focused this work on drylands, which cover over 40% of Earth's land surface and support more than 2 billion people. “These are places where challenges to food security, water availability and ecosystem health are often outrunning both our approaches and our understanding,” he said.

It’s this urgency that drives Caylor’s interdisciplinary approach. “I believe that advancing solutions to environmental problems requires combining diverse intellectual strengths,” he said. "To that end, Caylor works across disciplines and with local communities to reveal the dynamics connecting water, vegetation and society, and to use those insights to improve the resilience of these vulnerable regions.

That human connection

“I am thrilled to be recognized alongside these incredibly talented colleagues,” said Shelly Gable, a professor in the Department of Psychological & Brain Sciences and UCSB’s Dean of Science. “This honor really highlights the collaborative and forward-thinking scientific community we’ve built here at UC Santa Barbara, and I am so proud to be part of a class dedicated to moving science and society forward.”

Gable studies how motivation and emotions contribute to the dynamics and quality of close relationships. “My research explores how the positive aspects of our social lives — sharing joy, seeking intimacy and managing emotions together — serve as the foundation for our physical and psychological health,” she said.

The quality of our social bonds is one of the strongest predictors of our long-term physical health and psychological resilience, she explained. So rather than focus on how people cope with stress, her work highlights that how we respond to each other

in good times is often a more powerful indicator of a relationship's strength and our own health and well-being.

Taking an algebraic approach

"I am honored to be selected as a AAAS fellow," said mathematics professor David Morrison, "and am pleased that their selection process can recognize interdisciplinary scientists such as myself."

As an algebraic geometer, Morrison uses techniques in algebra to answer geometric questions. While he's worked on many topics within the field, he's devoted much of his attention to the interaction between algebraic geometry and string theory.

Shortly after Morrison completed his doctorate, an unexpected application of algebraic geometry came up in the form of superstring theory. This framework requires 10 spacetime dimensions, while we live in four. "So the physicists needed a way to describe the 'extra' six dimensions," he recalled. This quest guided his early research.

The discovery of "mirror symmetry" about six years later deepened Morrison's collaboration with theoretical physicists. By the time he joined UCSB in 2006, he was appointed jointly to the mathematics and physics departments.

Morrison's research interests have broadened over the course of his career. "I like to describe my work these days as searching for ways that modern mathematical tools can be applied to questions in theoretical physics, and when possible, vice versa," he said. "Of course, much of the physics work I do is related in one way or another to the superstring theories."

Marvelous materials

Javier Read de Alaniz has been honored for his contributions to the design and synthesis of stimuli-responsive organic materials, particularly materials that reversibly fade upon exposure to light.

"Being elected as a AAAS fellow is a tremendous honor, and I am incredibly grateful to AAAS for this distinction," said Read de Alaniz, a professor in the Department of

Chemistry & Biochemistry. “Science is fundamentally a collective endeavor, and I am deeply grateful to share this recognition with my co-workers and colleagues who have challenged, inspired and supported me throughout my career.”

According to Read de Alaniz, mother nature is the ideal materials scientist; she has spent millions of years perfecting materials that respond to light. “Think about a flower petal that opens and closes with the sun, a lizard that shifts color to stay cool in the desert, or a leaf that captures sunlight and converts it into energy,” he said. Inspired by nature, his lab aims to create molecules that can change shape, color and polarity when exposed to visible light.

While most light-sensitive molecules darken or become colored when light hits them, his molecules do the opposite: they become transparent. “By embedding these molecules into plastic materials, we can engineer objects that bend, walk and change color in response to visible light and then return to their original form the moment the light is removed,” he said. “The material itself becomes the machine.”

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