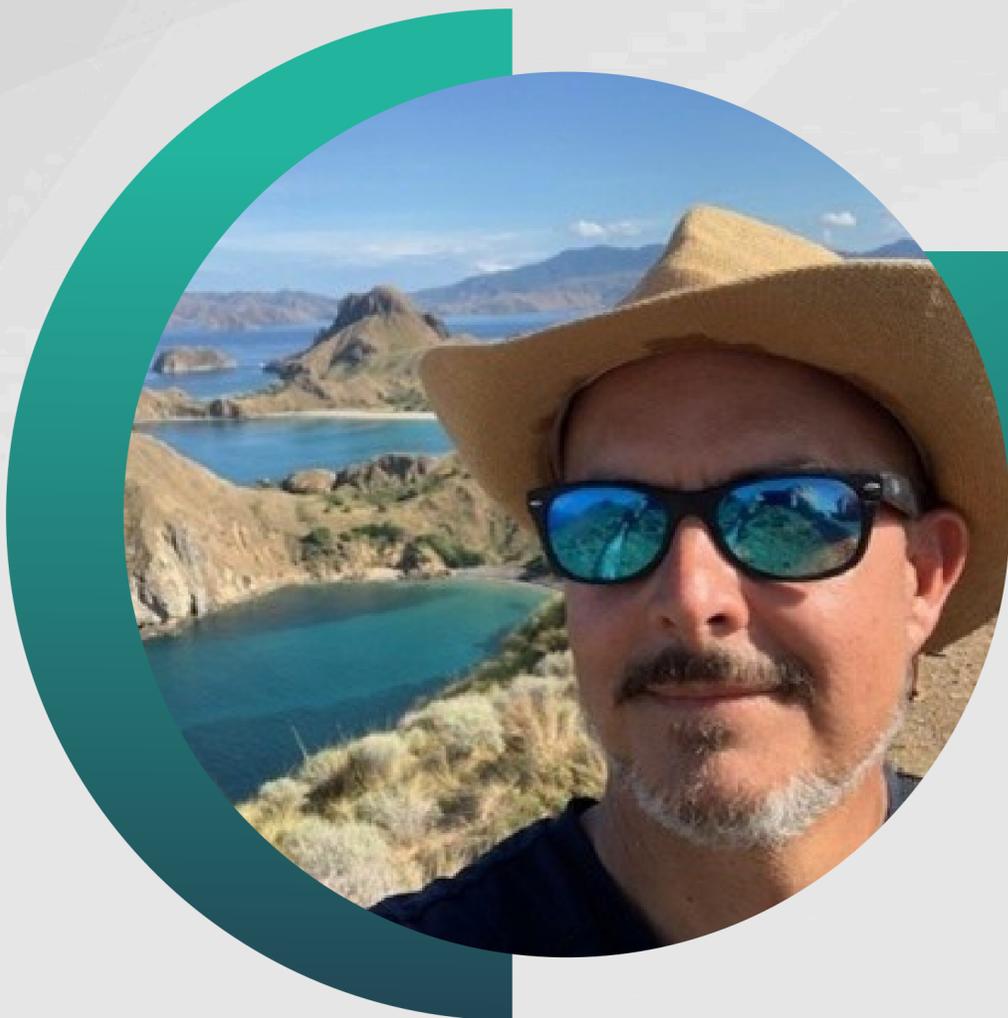


# UNIVERSITY OF CALIFORNIA, IRVINE

## DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

IS PROUD TO HOST A SEMINAR BY

***“LESSONS FROM NATURE: BIO-INSPIRED  
DESIGN OF FUNCTIONAL OPTICAL MATERIALS”***



**MICHAEL J. GORDON**

**WARREN G. AND KATHERINE S.  
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DEPARTMENT OF CHEMICAL ENGINEERING  
UNIVERSITY OF CALIFORNIA, SANTA BARBARA**

**Thursday, April 16, 2026**

**2:00 PM - 3:20 PM**

**McDonnell Douglas Engineering Auditorium**

**Abstract:** Near- and sub-wavelength photonic structures are widely used in nature to create vivid and often dynamically tunable colors, as well as to capture, manipulate, or emit light for vision, communication, crypsis, photosynthesis, and defense. This talk will highlight our efforts to understand these biological mechanisms of light manipulation and translate them into new materials and device platforms that leverage both biological components and bio-inspired architectures. Examples will include bio-inspired photonic surfaces derived from insect eye structures for anti-reflection and light extraction; diatom-inspired dielectric metasurfaces and nanomembranes that exploit quasi-periodic order and Fano resonances to produce angle-independent structural color and high-sensitivity optical sensing; and electrochemical systems that integrate light-interacting biomolecules such as reflectin—the intrinsically disordered squid protein responsible for dynamic coloration—to achieve voltage-controlled modulation of refractive index, thickness, and optical response in thin-film devices. Together, these examples illustrate how biological paradigms can guide the design of multi-scale photonic materials with tunable optical properties and new functionalities for sensing, energy, and adaptive optical technologies.

**Bio:** Michael J. Gordon is the Warren G. and Katharine S. Schlinger Professor of Chemical Engineering and Chair of the Department of Chemical Engineering at UCSB. He received his BS/MS in Chemical Engineering from the Colorado School of Mines, MS (Applied Physics) and PhD (Chemical Engineering) from the California Institute of Technology, and spent two years as a post-doc in Grenoble, France at the CNRS Laboratoire des Technologies de la Microélectronique.

Mike joined UCSB in 2007, was the dept's Vice-Chair for Undergraduate Affairs from 2019-2023, and became Department Chair in 2023. He is heavily involved in UCSB's Institute for Collaborative Biotechnologies and the Solid-State Lighting and Energy Electronics Center, as well as the Center for Programmable Energy Catalysis with the Univ. of Minnesota. Mike is a Packard Fellow, he received the NSF CAREER award, and he was the Robert E. Vaughn Lecturer at Caltech. He was also recently elected as a Fellow of the American Vacuum Society and he has received multiple department and campus-wide teaching awards. Professor Gordon's research focuses on advancing nanoscale science to transform energy, biophysics, photonics and chemical conversion.

