



RESEARCH FOCUS AREAS



Bioengineering
and Biotechnology



Catalysis, Surface Science
and Reaction Engineering



Materials, Polymers
and Transport Processes



Theory, Data Science
and Systems

FACULTY

Styliani Avraamidou

Circular economy systems; energy systems; multi-level optimization; robust optimization; supply-chain optimization

Rose K. Cersonsky

Molecular modeling and simulation; applied mathematics and machine learning; self-assembly and interactions of complex building blocks; colloids, soft matter, and nanomaterials

Quentin Dudley

Plant synthetic biology; metabolic engineering; cell-free systems; genome editing

Matthew A. Gebbie

Interfaces; electrochemistry; soft materials; nanoscience; electrocatalysis; energy storage; electrolytes; ionic liquids

Michael D. Graham

Fluid mechanics; flow and rheology of complex and multiphase fluids; blood flow; nonlinear dynamics

Jeffrey P. Greeley

Heterogeneous catalysis, Electrocatalysis; Energy storage in batteries

George W. Huber

Heterogeneous catalysis; renewable fuels and chemicals; biomass conversion; plastic recycling

Daniel J. Klingenberg

Colloid science; complex fluids; suspension rheology

Siddarth H. Krishna

Heterogeneous catalysis; kinetics and mechanisms; microporous materials; sustainable fuels and chemicals; pollution control

Whitney S. Loo

Polymers; soft materials; nanomaterials; sustainability

David M. Lynn

Soft materials; surfaces and interfaces; polymers; nanotechnology; biotechnology; drug delivery

Manos Mavrikakis

Thermodynamics; kinetics and catalysis; surface science; computational chemistry; fuel cells; sensors; nanoscience

Mai Ngo

Tissue engineering, cell engineering, mammalian synthetic biology, biomaterials, cell-cell communication

Sean P. Palecek

Stem cell engineering; therapeutic cell biomanufacturing; antimicrobial agents; cell signaling

Joel A. Paulson

Artificial intelligence & machine learning; Optimization theory & algorithms; Data-driven control & experimental design

Brian F. Pfleger (Chair)

Synthetic biology; biotechnology; protein engineering; sustainable chemical production

Thatcher W. Root

Green chemistry; renewable resources; catalysis; spectroscopy

Marcel Schreier

Electrocatalysis; renewable energy; electrified interfaces; kinetics and catalysis; surface chemistry; electrochemical synthesis of chemicals

Eric V. Shusta

Drug delivery; protein engineering; stem cell engineering; biopharmaceutical design

Rahul Sujanani

Polymers; Membranes; Transport Phenomena; Ion Separations

Ross E. Swaney

Process design, synthesis, modeling and optimization

Reid C. Van Lehn

Molecular simulations; nanomaterials; soft materials; nano-bio interactions; cell membranes; solvent effects

John Yin

Systems biology; virus-cell interactions; immunology; microfluidics

Victor M. Zavala

Optimization; control; data science; energy and environmental systems

AFFILIATE FACULTY

AJ Boydston

Additive manufacturing (3D printing); photoredox-catalyzed polymerizations; polymerizations in continuous flow; mechanochemistry

Padma Gopalan

Polymer synthesis and characterization; electro-optic and photonic materials; self-assembly of block copolymers; photonic devices; liquid crystalline polymers

Fang Liu

Material chemistry; electrochemistry; interface characterization; high-throughput experimentation; energy storage and conversion; sustainability

Vatsan Raman

Systems and synthetic biology; protein design; biosensors; synthetic bacteriophages; high-throughput functional assays; sequence-function landscapes

James J. Schauer

Measurement and chemical characterization tools; air pollution origin and impacts; sensing

Saverio E. Spagnolie

Fluid mechanics; soft matter; biophysics; applied mathematics; numerical methods

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