

Physical Chemistry

Department of Chemistry
University of Illinois Urbana-Champaign



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Mikael Backlund

Quantum sensing and metrology; optical microscopy; magnetic resonance; single-molecule and super-resolution microscopy; biophysics; condensed matter



Majed S. Fataftah

Inorganic and bioinorganic chemistry; synthesis, spectroscopy, and electronic structure; metal-organic frameworks; molecular magnetism; quantum information science



Hee-Sun Han

Droplet microfluidics; high throughput imaging; spatial omics; bottom-up construction of synthetic cells; systems biology in brain and virus evolution



So Hirata

Electronic and vibrational quantum many-body theories for molecules, polymers, and solids; computational spectroscopy; high-performance computing; computer algebra for many-body theory formulation and programming



Nicholas E. Jackson

Theoretical chemistry; soft materials simulations; machine learning; coarse-graining; polymer chemistry; organic electronics



Prashant K. Jain

Quantum light-matter interactions; superresolution vibrational spectroscopy; mechanisms of energy and charge flow on the nanoscale; plasmonics; photophysics and photochemistry



Christy F. Landes

Physical, analytical and materials chemistry; predictive separations; spectro-electrochemistry; protein dynamics at interfaces; imaging and signal processing; single-molecule spectroscopy



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Physical Chemistry

chemistry.illinois.edu

Other faculty with interests in Physical Chemistry

Liviu M. Mirica

Spectroscopy of transition metal catalysts; photocatalysis; physical inorganic chemistry

Alex Mironenko (faculty affiliate)

Density functional theory; heterogeneous catalysis; electroseparations

Catherine J. Murphy

Inorganic nanomaterials

Lisa Olshansky

Switchable ligands & metal coordination

Baron G. Peters (faculty affiliate)

Catalysis, nucleation, and crystal growth

Taras Pogorelov (faculty affiliate)

Biophysical theory and modeling

Jonathan V. Sweedler

Neurochemistry; cell-cell signaling pathways

Emad Tajkhorshid (faculty affiliate)

Computational structural biology and molecular biophysics; membrane proteins; drug design



Stephan Link

Photophysics and photochemistry of nanomaterials; plasmonics; solar energy conversion; single-particle imaging; ultrafast spectroscopy



Zaida Luthey-Schulten

Integration of experiments, theory, and simulations into whole cell models; stochastic simulations of biological processes in minimal cells; physics of metabolism and ribosome biogenesis; dynamical networks of protein-RNA and protein-DNA interactions; statistical mechanics of the genome and DNA replication



Nancy Makri

Theory and simulation of quantum dynamics; development of rigorous, fully quantum mechanical path integral methods for simulating dynamical processes in condensed-phase and biological systems.



Eric Oldfield

Antifungal, antiparasitic and antibacterial drug discovery



Benjamin Snyder

Synthesis and characterization of porous materials for heterogeneous catalysis and adsorptive separations; inorganic spectroscopy and electronic structure; chemistry of zeolites and metal-organic frameworks



Megan A. Steves

Single-molecule biophysics; super-resolution microscopy; molecular transport; molecular interactions at interfaces; nanoscale cell biology; nanomaterials



Josh Vura-Weis

Tabletop femtosecond X-ray spectroscopy of excited-state nuclear and electronic dynamics in transition metal complexes; focusing on short-lived states in inorganic catalysts and photomagnetic materials