Physical Chemistry

Department of Chemistry
University of Illinois Urbana-Champaign

For more information on Physical Chemistry faculty, scan →

Mikael Backlund

Optical microscopy; quantum sensing; magnetic resonance; single-molecule and super-resolution microscopy; metrology; 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

Development of microfluidics & imaging technologies for systems biology; modeling the ensemble behavior of complex biological systems; imaging-based spatial omics; microfluidics-based high-resolution assays; bottom-up construction of synthetic cells

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 soft materials chemistry; electron and ion transport; machine learning applied to molecular and polymeric systems; multiscale all-atom and coarse-grained simulations

Prashant K. Jain

Quantum light-matter interactions; superresolution vibrational spectroscopy; chemistry under quantized excitations; mechanisms of energy and charge flow on the nanoscale; plasmonics; photophysics and photochemistry; phase transitions on the nanoscale

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also see reverse side

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Physical Chemistry

chemistry.illinois.edu

Other faculty with interests in Physical Chemistry

Deborah Leckband (faculty affiliate)
Recognition and nanoscale properties at biomaterial interfaces; biomolecular force transduction; membrane protein interactions; fluorescence imaging

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 (research faculty)
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

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Christy F. Landes

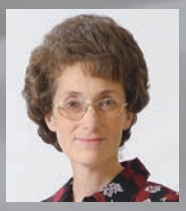
Physical, analytical and materials chemistry; predictive separations; spectro-electrochemistry; protein dynamics at interfaces; imaging and signal processing; single-molecule spectroscopy

Stephan Link

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

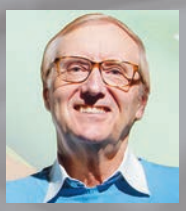
Zaida Luthey-Schulten

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

Development and application of path integral and trajectory-based methods for simulating quantum dynamical processes in the condensed phase



Eric Oldfield

Drug discovery using NMR, X-ray, and computational methods

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

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