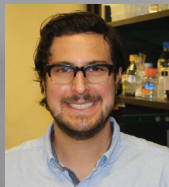


Physical Chemistry

Department of Chemistry
University of Illinois at Urbana-Champaign

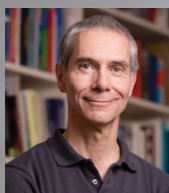
For more information, visit
chemistry.illinois.edu



Mikael Backlund

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

chemistry.illinois.edu/mikaalb



Martin Gruebele

Dynamics of complex systems by computation and theory, from single particle dynamics to vibrational energy flow in molecules; quantum measurement and disorder

chemistry.illinois.edu/mgruebel



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

chemistry.illinois.edu/hshan



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

chemistry.illinois.edu/sohirata



Nick Jackson

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

chemistry.illinois.edu/jacksonn



Prashant K. Jain

Molecular and nano-optics; plasmonics; near-field manipulation of photophysics and photochemistry; super-resolution imaging of active sites in heterogeneous catalysis; phase transformations in single nanodomains; artificial photosynthesis

chemistry.illinois.edu/jain

Physical Chemistry

Other faculty with interests in Physical Chemistry

Dana D. Dlott (emeritus faculty)
Laser spectroscopy under extreme conditions

Robert B. Gennis (emeritus faculty)
Membrane proteins; bioenergetics

Andrew A. Gewirth
Spectroscopy and microscopy of energy-related interfaces

Zhaleh Ghaemi (research faculty)
Theoretical and computational biophysics

Gregory S. Girolami
Chemical vapor deposition; catalysis; molecule-based magnets

Catherine J. Murphy
Inorganic nanomaterials

Lisa Olshansky
Spectroscopic interrogation of transient states formed during solar to fuels conversion and within switchable artificial metalloproteins

Baron Peters (faculty affiliate)
Catalysis, nucleation, and crystal growth

Taras Pogorelov (research faculty)
Biomolecular computation

Charles M. Schroeder (faculty affiliate)
Single-molecule studies of polymers and biomolecules

Kenneth S. Suslick (emeritus faculty)
Sonochemistry; sensor arrays

Jonathan V. Sweedler
Neurochemistry; cell-cell signaling pathways

Emad Tajkhorshid (faculty affiliate)
Computational structural biology and molecular biophysics; membrane proteins; drug design



Deborah E. Leckband

Biophysics of biological adhesion and force transduction, membrane protein interactions, protein function at interfaces, fluorescence measurements, molecular dynamics simulations, molecular force measurements

chemistry.illinois.edu/leckband



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

chemistry.illinois.edu/zan



Nancy Makri

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

chemistry.illinois.edu/nmakri



Eric Oldfield

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

chemistry.illinois.edu/eoldfiel



Kenneth S. Schweizer

Statistical mechanical theory of the structure, phase behavior, properties and dynamics of soft materials composed of molecules, polymers, colloids, and nanoparticles in the liquid, crystal, glass and gel states

chemistry.illinois.edu/kschweiz



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

chemistry.illinois.edu/vuraweis