

UO Department of Chemistry - Faculty Research Interests

Boettcher, Shannon W. - The Boettcher laboratory utilizes inorganic synthesis, nano and microscience, surface chemistry, simulation, physical measurement, and device fabrication to design, build and study new materials and structures that have applications in solar energy harvesting and electrochemical energy storage.

Brozek, Carl - The Brozek Lab synthesizes soft materials and uses physical inorganic methods to investigate their unique redox properties for catalysis, energy capture, and electronic devices.

Cina, Jeffrey A. - The Cina group works on the theory and simulation of time-resolved optical spectroscopy.

Cook, Amanda - Research in the Cook group develops new catalysts for the transformation of organic molecules. The catalysts studied are molecular organometallic complexes, as well as heterogeneous materials with well-defined active sites. We also use elements of physical organic chemistry to study the mechanisms of these transformations.

DeRose, Victoria J. - The DeRose lab is investigating chemical activity and structure in nucleic acids and proteins, with an emphasis on metal interactions.

Doxsee, Kenneth M. - Research in the Doxsee group revolves around various aspects of molecular recognition phenomena.

Guenza, Marina G. - The Guenza group studies the structure and dynamics of complex fluids.

Haley, Michael M. - The Haley lab specializes in organic synthesis for the preparation of new pi-electron-rich molecules for use in organic electronics, as sensors for environmental contaminants, and as potential therapeutic agents.

Hansen, Scott - The Hansen lab uses biochemistry and quantitative cell biology to characterize the enzymology and system level behavior of membrane associated signaling reactions.

Harms, Michael - The overarching goal of the Harms lab is to understand the relationship between the biophysical properties of proteins and their evolution.

Hawley, Diane K. - Hawley's research group is interested in the enzymology of RNA polymerases and the mechanisms by which eukaryotic transcription is regulated.

Hendon, Christopher H. - The Hendon Materials Simulation group using quantum mechanics and super computers to explore chemical properties arising in metal-organic frameworks and on the surfaces of catalysts.

Hutchison, James E. - The Hutchison lab focuses on molecular-level design and synthesis of functional surface coatings and nanomaterials.

Jasti, Ramesh - The Jasti research group uses organic synthesis to probe structure-property relationships of graphitic nanomaterials.

Johnson, Darren W. - Research in the DW Johnson group explores problems in coordination chemistry and organic synthesis using the relatively new field of supramolecular chemistry as a tool.

Johnson, David C. - Dave Johnson's research is at the interface of chemistry and physics. His group has pioneered a new approach to the synthesis of extended solids that permits them to prepare families of new nanostructured and kinetically stable compounds.

Kellman, Michael E. - Theoretical dynamics of highly excited molecules are the focus of research in the Kellman group. A recent new direction is quantum statistical mechanics and thermodynamics of quantum states of molecules embedded in a quantum environment.

Lonergan, Mark C. - Research in the Lonergan group blends synthesis, physical measurement and rational design to better understand or discover interesting electrical and electrochemical phenomena in solid-state systems.

Marcus, Andrew - The Marcus group studies the structure and dynamics of macromolecules in biological environments.

Nazin, George - The Nazin group investigates the connection between the chemical structure and properties of nanoscale materials and

Nolen, Brad J. - The Nolen lab is investigating the molecular basis for regulation of the cytoskeleton, the molecular framework that provides physical support for cells.

Page, Catherine J. - Research in the Page laboratory is focused on the synthesis and characterization of new solid-state materials that have relevance to developing technologies.

Pluth, Michael D. - Research in the Pluth group focuses on extending traditional uses of molecular recognition by the rational design of systems poised to activate small molecules for use in catalysis and sensing.

Prehoda, Kenneth E. - Research in the Prehoda lab focuses on the biochemical processes that allow cells to respond to changes in their environment.

Prell, James S. - The Prell group uses state-of-the-art mass spectrometry and ion mobility techniques, along with computational modeling, to probe the organization of complex condensed-phase materials at the nanoscale. Focusing primarily on biomaterials, we investigate the physical chemistry principles that govern the function and dynamics of megadalton-sized macromolecular assemblies of proteins, lipids, and other biomolecules as well as their interactions with pharmaceuticals.

Richmond, Geraldine L. - The Richmond group uses experimental and computational methods in their fundamental studies of surfaces and interfaces that have relevance to important environmental, technological and biological processes.

Tyler, David R. - The research in Tyler's laboratory focuses on mechanistic organometallic and inorganic chemistry, polymer chemistry, catalysis, and photochemistry.

von Hippel, Peter H. - The von Hippel lab uses physical biochemical solution and spectroscopic approaches to study the molecular mechanisms of the 'macromolecular machines' involved in DNA replication and RNA transcription.

Widom, Julia - Research in the Widom group uses ultrafast and single molecule spectroscopy to study RNA structure and dynamics

Wong, Cathy - Develops in situ time-resolved non-linear laser spectroscopies to measure, understand, and control the self-assembly of nanoscale building blocks, such as organic molecules, polymers, and quantum dots.

Faculty Research Interests by Research Area

| Analytical/Bioanalytical Chemistry | Environmental Chemistry | Organic Synthesis |
|--|---|--|
| Scott Hansen James S. Prell | James E. Hutchison Darren W. Johnson David C. Johnson Mark C. Lonergan | Amanda Cook Victoria J. DeRose Kenneth M. Doxsee Michael M. Haley James E. Hutchison Ramesh Jasti Darren W. Johnson Catherine J. Page |
| Biochemistry, Molecular Biology | Inorganic, Organometallic Chemistry | Physical Chemistry |
| Alice Barkan (biology) Bruce Bowerman (biology) Victoria J. DeRose Chris Doe (biology) David Garcia (biology) Karen Guillemain (biology) Scott Hansen Mike Harms Diane K. Hawley Tory Herman (biology) Eric Johnson (biology) Diana Libuda (biology) Andrew H. Marcus Jeff McKnight (biology) Brad J. Nolen Annie Powell (biology) Kenneth E. Prehoda James S. Prell S. James Remington (physics) Eric Selker (biology) George Sprague (biology) Peter H. von Hippel (retired, research active) Philip Washbourne (biology) Julia Widom | Geraldine L. Richmond David R. Tyler Shannon W. Boettcher Carl Brozek Amanda Cook Victoria J. DeRose Kenneth M. Doxsee Michael M. Haley Christopher H. Hendon James E. Hutchison Ramesh Jasti David C. Johnson Darren W. Johnson Catherine J. Page Michael D. Pluth David R. Tyler | Michael D. Pluth David R. Tyler Jeffrey A. Cina Marina G. Guenza Christopher H. Hendon Michael E. Kellman David C. Johnson Mark C. Lonergan Andrew H. Marcus George Nazin James S. Prell Geraldine L. Richmond Julia Widom Cathy Wong |
| Bioorganic Chemistry & Chemical Biology | Materials Chemistry | Polymer Chemistry |
| Victoria J. DeRose Kenneth M. Doxsee Michael M. Haley Darren W. Johnson Michael D. Pluth | Shannon W. Boettcher Carl Brozek Amanda Cook Kenneth M. Doxsee Marina G. Guenza Michael M. Haley Christopher H. Hendon James E. Hutchison Ramesh Jasti Darren W. Johnson David C. Johnson Mark C. Lonergan Andrew H. Marcus George Nazin Catherine J. Page | Marina G. Guenza Carl Brozek James E. Hutchison Mark C. Lonergan Andrew H. Marcus David R. Tyler |
| Biophysics | Optics & Spectroscopy | Solid-State Chemistry |
| Eric Corwin (physics) Victoria J. DeRose Marina G. Guenza Scott Hansen Mike Harms Diane K. Hawley James E. Hutchison Shawn Lockery (biology) Andrew H. Marcus Jeff McKnight (biology) Brad J. Nolen Raghuvver Parthasarathy (physics) Kenneth E. Prehoda James S. Prell S. James Remington (physics) Tristan Ursell (physics) William Roberts (biology) Peter H. von Hippel (retired, research active) Julia Widom | Andrew H. Marcus George Nazin Catherine J. Page James S. Prell Geraldine L. Richmond David R. Tyler Cathy Wong Jeffrey A. Cina Victoria J. DeRose Michael E. Kellman Andrew H. Marcus George Nazin Geraldine L. Richmond Julia Widom Cathy Wong | Shannon W. Boettcher Carl Brozek Amanda Cook Kenneth M. Doxsee Christopher H. Hendon Ramesh Jasti David C. Johnson Catherine J. Page |
| | | Statistical Mechanics of Liquids & Complex Fluids |
| | | Marina Guenza Andy Marcus |
| | | Surface & Interfacial Chemistry |
| | | Shannon W. Boettcher Carl Brozek Amanda Cook Christopher H. Hendon James E. Hutchison David C. Johnson Mark C. Lonergan George Nazin Catherine J. Page Geraldine L. Richmond |
| | | Theoretical Chemical Physics |
| | | Jeffrey A. Cina Marina G. Guenza Christopher H. Hendon Michael E. Kellman |