

Materials Chemistry



What is Materials Chemistry?

The Materials Chemistry specialization is an exciting, interdisciplinary program of research at the intersection of materials science and chemistry. Faculty in this specialization represent a range of research interests from biomaterials to polymers to inorganic nanoparticles. Our research encompasses the chemical synthesis of materials, the molecular and physical basis of materials structure and properties, and the interplay between molecular-level structure, composition, and functional properties.

Department of Chemistry
University of Illinois at Urbana-Champaign

For more information, visit
chemistry.illinois.edu



Paul V. Braun

Electrochemical energy storage; responsive polymers; self-healing materials; mesoscale materials; optical materials; chemical sensors; self-assembly

chemistry.illinois.edu/pbraun



Jianjun Cheng

Polymers for drug delivery; polypeptides; self-healing materials

chemistry.illinois.edu/jianjunc



Andrew A. Gewirth

Materials properties of surfaces and interfaces with relevance to energy storage; electrocatalysis; materials fabrication; electrochemistry

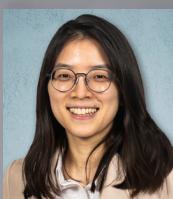
chemistry.illinois.edu/agewirth



Gregory S. Girolami

Synthesis of transition metal and f-metal complexes and their use in catalysis; as precursors for the chemical vapor deposition of micro- and nanoelectronic devices; in energy applications; and for the reprocessing of nuclear fuel

chemistry.illinois.edu/ggirolam



Hee-Sun Han

Synthesis and bioimaging applications of colloidal nanoparticles; micron-sized soft materials for single virus/cell analysis; microfluidics; *in vitro/in vivo* imaging; single virus/cell sequencing

chemistry.illinois.edu/hshan



Prashant K. Jain

Plasmonics; near-field manipulation of photophysics and photochemistry; super-resolution imaging of active sites in heterogeneous catalysis; artificial photosynthesis; imaging phase transformations in single nanocrystals

chemistry.illinois.edu/jain



Deborah E. Leckband

Biochemistry at material interfaces; protein stability in hybrid biomaterials; biomaterials; colloidal and surface forces; surface engineering

chemistry.illinois.edu/leckband

also see reverse side

Materials Chemistry

Other faculty with interests in Materials Chemistry

Qing Cao (affiliate faculty)

Materials for novel (opto)electronic devices

Qian Chen (affiliate faculty)

Soft matter design, characterization, and applications

Dana D. Dlott (emeritus faculty)

Laser spectroscopy under extreme conditions

Mary L. Kraft (affiliate faculty)

Biological membrane imaging

Lisa Olshansky

Switchable materials for renewable energy applications

Kenneth S. Suslick (emeritus faculty)

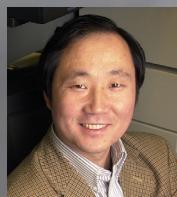
Sonochemistry; sensor arrays

Xing Wang (research faculty)

Nucleic acids based nanomaterials for applications in chemistry, biology, and medicine

Hong Yang (affiliate faculty)

Nanomaterials for catalysis



Yi Lu

Functional DNA nanotechnology and its application in directed assembly of nanomaterials with controlled morphologies in response to multiple stimuli, and in photonics, sensing, imaging and targeted drug delivery

chemistry.illinois.edu/yi-lu



Jeffrey S. Moore

Chemistry of self-healing systems; development and study of vascular composites and encapsulated materials; mechanochemical transduction

chemistry.illinois.edu/jsmoore



Catherine J. Murphy

Synthesis, characterization, biological applications and environmental implications of colloidal inorganic nanoparticles; surface chemistry and plasmonic properties of gold nanoparticles; sustainability

chemistry.illinois.edu/murphycj



Ralph G. Nuzzo

The chemistry of materials; nano and micro-scale fabrication; soft materials; integrated devices; self-organizing structures

chemistry.illinois.edu/r-nuzzo



Joaquín Rodríguez-López

Nanoelectrochemistry; advanced electrochemical characterization and imaging of materials and interfaces for electrocatalysis and energy storage; redox polymers; ultrathin electrodes; electrochemical simulation

chemistry.illinois.edu/joaquinr



Renske M. van der Veen

Time-resolved and ultrafast characterization of functional nanomaterials; excited-state dynamics; photoswitching, photocatalytic and photovoltaic materials; ultrafast spectroscopy and microscopy

chemistry.illinois.edu/renske



Josh Vura-Weis

Femtosecond X-ray spectroscopy of catalytic reaction intermediates

chemistry.illinois.edu/vuraweis



Steven C. Zimmerman

Development of sustainable polymers; biomaterials for drug delivery; polymeric artificial enzymes

chemistry.illinois.edu/sczimmer