

# Materials Chemistry

Department of Chemistry  
University of Illinois at Urbana-Champaign

For more information, visit  
[chemistry.illinois.edu](http://chemistry.illinois.edu)



## 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.

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**Paul V. Braun**

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

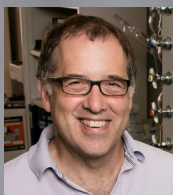
[chemistry.illinois.edu/pbraun](http://chemistry.illinois.edu/pbraun)



**Jianjun Cheng**

Polymers for drug delivery; polypeptides; self-healing materials

[chemistry.illinois.edu/jianjunc](http://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](http://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](http://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

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**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

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**Deborah E. Leckband**

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

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also see reverse side

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# 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)

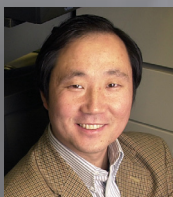
Sonochemistry; sensor arrays

### 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](http://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](http://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](http://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](http://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](http://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](http://chemistry.illinois.edu/renske)



### Josh Vura-Weis

Femtosecond X-ray spectroscopy of catalytic reaction intermediates  
[chemistry.illinois.edu/vuraweis](http://chemistry.illinois.edu/vuraweis)



### Steven C. Zimmerman

Development of sustainable polymers; biomaterials for drug delivery; polymeric artificial enzymes  
[chemistry.illinois.edu/sczimmer](http://chemistry.illinois.edu/sczimmer)

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