

ONE WORD To Drive Discovery — RENSSELAER

Chemistry and

Chemical Biology

AT RENSSELAER



What is the best Ph.D. Chemistry program for you?

Choosing the right Ph.D. Chemistry program depends on many factors, including the area of your research interests, your academic background and your professional goals as well as on the quality of the faculty, the strength and the flexibility of the program, and the financial support of the department. If you are interested in working in an interdisciplinary environment, with outstanding faculty in an excellent mentoring environment, and a flexible program tailored to your research interests, we suggest that you consider the department of Chemistry and Chemical Biology at Rensselaer.



WHY RENSSELAER?

- Projects in emerging fields of science and technology at the intersection of traditional disciplines
- Personal interactions with faculty mentors across departments
- Vibrant geographical region with ties to top researchers in medicine and technology

The **Department of Chemistry and Chemical Biology** at Rensselaer invites applications from students interested in pursuing a Ph.D. degree in an interdisciplinary environment with research opportunities in traditional areas as well as emerging fields, such as biotechnology and nanotechnology. We offer research opportunities in a number of interdisciplinary areas, including design, synthesis, and characterization of polymers and nanomaterials, biosensors, computational drug design, fuel cells, biochemical solar energy research, glycobiology, medicinal and synthetic chemistry, state-of-the-art protein NMR and EPR, and protein misfolding diseases.

A full financial package with a competitive stipend is available to qualified students.

TIMELINE

Review of applications will commence during the Fall. Application deadline is January 15. Early applications are encouraged, including consideration for special fellowship programs through NSF IGERT and NIH.



APPLICATION PROCESS

Application forms must be obtained and submitted online (<http://gradadmissions.rpi.edu>). The additional required materials must be submitted via regular mail to:

Graduate Admissions Rensselaer Polytechnic Institute
110 8th Street
Troy, NY 12180-3590 USA
admissions@rpi.edu <http://gradadmissions.rpi.edu>

For more information visit
<http://www.rpi.edu/dept/chem>

Contact:

Ms. Sharon Gardner, Administrative Assistant
derris@rpi.edu; (518) 276- 2140
120 Cogswell Building
Rensselaer Polytechnic Institute
110 8th Street
Troy, NY 12180-3590

Faculty Research

* denotes faculty members with primary appointments in other departments.

Ronald A. Bailey, Professor

Coordination chemistry and transition metal chemistry in molten salts.

*Blanca Barquera, Assistant Professor

Na⁺ bioenergetics in bacteria on a number of levels, from global gene expression studies and bacterial physiology to biochemistry and mechanistic enzymology.

Curt Breneman, Professor

Early computational screening of drug candidates for possible side-effects, RECON/TAE transferable atom equivalent (TAE) modeling, and machine learning in virtual high-throughput molecular property screening.

Wilfredo Colón, Associate Professor

Mechanisms of protein misfolding and aggregation leading to amyloid formation and human diseases, proteomics, high throughput detection of kinetically stable proteins, protein folding and design.

James V. Crivello, Professor

New polymer forming reactions, novel initiators, block polymers, and metal-catalyzed ring opening polymerization.

Alan R. Cutler, Professor

Carbonylation chemistry, catalytic hydrosilation and hydrometalation, and CO₂ fixation.

Peter H. Dinolfo, Assistant Professor

Surface functionalization methods for solar to electrical energy conversion, synthesis of multi-electron redox catalysts, and the electrochemical and spectroscopic examination of supramolecular coordination compounds.

James Kempf, Assistant Professor

Biomolecular NMR spectroscopy to study the influence of intra-molecular motions on chemical function, with emphasis on dynamics in post-translationally modified proteins.

Gerald M. Korenowski, Professor

Non-linear optics, spectroscopy, surface imaging, interfacial studies, and optical materials.

K. V. Lakshmi, Assistant Professor

Advanced solids NMR and pulsed EPR spectroscopy methods to (i) study energy and signal transduction by membrane proteins and (ii) elucidate the structure and function on DNA- and RNA-binding proteins.

Robert Linhardt, Senior Constellation Professor of Biocatalysis and Metabolic Engineering

Glycobiology, glycomics, chemoenzymatic synthesis, microanalysis and high-throughput screening.

* George Makhatadze, Professor

Rational protein engineering and design with emphasis on protein stability, computational and experimental studies of the mechanism of protein folding and stability, thermodynamics of protein-protein, protein-DNA/RNA, and protein-ligand interactions.

Linda B. McGown, William Weightman Walker Professor and Dept Head

Optical spectroscopy, capillary electrophoresis and MALDI-mass spectrometry; design and characterization of nanostructured biomaterials; affinity techniques; the role of genomic architecture in disease; forensic analysis.

James A. Moore, Professor

Multifunctional polyelectrolytes, novel polymers and polymerization methods, and ways to produce novel polymers from renewable resources such as cellulose.

*Marianne Nyman, Associate Professor

Environmental analytical chemistry, sediment remediation, fate and transport of hydrophobic organic compounds in natural and engineered systems, and aquatic chemistry.

Mark Platt, Assistant Professor

Mass spectrometry to identify peptides and proteins within biological systems, focusing on proteomics, protein phosphorylation, and differential analysis.

Chang Ryu, Associate Professor

Macromolecular separation and adsorption, block copolymer self-assembly in solution and thin films, and electroactive organic materials.

Joseph T. Warden, Professor

Research at the interface of physical chemistry and biochemistry: biological redox chemistry, photobiology, reactive free radicals, and EPR spectroscopy.

*Chunyu Wang, Assistant Professor

Application of NMR spectroscopy to study significant and interesting problems in neuroscience and aging, such as Alzheimer's disease.

Mark Wentland, Professor

Design and synthesis of novel agents to treat cocaine addiction in humans.