DEPARTMENT OF CHEMISTRY

208 Clapp Hall
Phone: 216.368.3852; Fax: 216.368.3006
Anna Cristina Samia, Department Chair
anna.samia@case.edu

More Information: https://chemistry.case.edu

The Department of Chemistry is the largest department representing the chemical sciences at Case Western Reserve University. It consists of 19 faculty members, 15 associated faculty, about 5 postdoctoral associates, approximately 60 graduate students, and over 100 undergraduate students majoring in chemistry. The department offers undergraduate and graduate degree programs leading to the Bachelor of Arts, Bachelor of Science, Master of Science, and Doctor of Philosophy.

The general focus of chemistry is on (1) understanding the basic properties of matter, (2) employing this knowledge in the design, synthesis, and characterization of materials with novel and useful properties, and (3) using chemical perspectives and tools to better understand biological systems. The various degree programs strive to develop all aspects of the student's chemical knowledge through a broad range of lecture and laboratory courses.

Chemical research is an integral part of the department's activities: over $3 million of federal, state, and private research support flows into the department each year. State-of-the-art research facilities are available to both graduate and undergraduate students. Undergraduates are encouraged to participate in research projects with individual faculty members in order to expand their hands-on training, problem-solving skills, and understanding of the scientific method as applied in chemical research. These research projects typically involve interchange and collaboration across all levels of experience and may also involve scientists from other departments and institutions.

Chemistry is often referred to as "the central science" because of its key role in interdisciplinary studies. Correspondingly, a degree in chemistry affords a broad range of employment opportunities. Chemists can direct their talents to specialized problems of applied research, or they can choose to delve into fundamental investigations. A degree in chemistry can cover the spectrum of chemical specialties, from biochemistry to interstellar chemistry. The degree also provides valuable preparation for other professions, such as medicine, dentistry, and law.

The American Chemical Society, with more than 160,000 members, is the major professional society in the United States for practicing chemists. Both undergraduate and graduate students may join the society.

Facilities

The department's facilities for experimental and theoretical research are modern and extensive. They include diverse major instruments for use by faculty and students, as well as specialized equipment serving individual research groups. Shared instrumentation includes 400- and 500-MHz NMR spectrometers and ultrafast laser systems in both the Center for Chemical Dynamics and the newly established Ultrafast Laser Facility.

Other departmental instrumentation includes equipment for laser Raman spectroscopy, GC-MS and LC-MS/MS mass spectrometers, calorimeters, stopped-flow kinetics instrumentation, a circular dichroism spectrometer, an analytical ultracentrifuge, and equipment for electrochemical measurements. Access to very high-field NMR instrumentation is available on campus at the Cleveland Center for Membrane Structural Biology (CCMSB), which is equipped with numerous 500- to 900-MHz NMR spectrometers for solution and solid-state measurements. The chemistry department's computers are part of the campus-wide fiber optic communications network operated by Information Technology Services, and the entire University Circle area offers wireless access. In addition to the full complement of software, Internet, and library database services offered by the university, connections to off-site databases, such as SciFinder and Ohio Supercomputer Center, are available to departmental users.

The department uses some of the foremost equipment available in high-resolution nuclear magnetic resonance spectroscopy and in tunable laser spectroscopy. Work on various aspects of chemistry as studied by these techniques is recognized throughout the world.

Primary Faculty

Anna C. Samia, PhD
(Georgia Institute of Technology)
Associate Professor and Chair
Analytical chemistry, inorganic chemistry, materials and energy, bioinorganic chemistry, functional nanomaterials, nanotheranostics

Clemens Burda, PhD
(University of Basel, Switzerland)
Chemical Professor
Photochemistry, materials, physical chemistry, nanochemistry, bio- and energy applications, biophysical and biomedical science and engineering, spectroscopy

Carlos E. Crespo-Hernández, PhD
(University of Puerto Rico)
Professor; Associate Dean for Research
Analytical chemistry, biophysical chemistry, energy, photochemistry, physical chemistry, chemical dynamics and kinetics, computational chemistry, environmental chemistry, time-resolved spectroscopy

Thomas G. Gray, PhD
(Harvard University)
Professor
Inorganic, Organometallic, Materials, and Computational Chemistry

Metin Karayilan, PhD
(Uriversity of Arizona)
Assistant Professor

Irene Lee, PhD
(Pennsylvania State University)
Professor
Biochemistry, medicinal chemistry, bioorganic chemistry

Fu-Sen Liang, PhD
(The Scripps Research Institute)
Associate Professor
Bioorganic chemistry

Divita Mathur, PhD
(Iowa State University)
Assistant Professor
Drew A. Meyer, PhD  
(Stanford University)  
*John Teagle Professorial Fellow in Chemistry; Senior Instructor*  
Physical chemistry, inorganic chemistry, X-ray spectroscopy, chemical education  

Shane M. Parker, PhD  
(Northwestern University)  
*Frank Hovorka Assistant Professor of Chemistry*  
Computational and theoretical chemistry  

John D. Protasiewicz, PhD  
(Cornell University)  
*Hurlbut Professor of Chemistry*  
Inorganic chemistry, materials and energy, organometallic chemistry, photochemistry, catalysis, computational chemistry, crystallography, electrochemistry, green chemistry, main group chemistry, molecular electronics, nanotechnology, OLEDs, optoelectronics, physical organic chemistry, polymers, solar energy, solid-state chemistry, spectroscopy, supramolecular chemistry, synthesis  

Robert G. Salomon, PhD  
(University of Wisconsin, Madison)  
*Charles Frederic Mabery Professor of Research in Chemistry*  
Biochemistry, chemical biology, medicinal chemistry, organic chemistry, bioorganic chemistry, cellular biology, molecular biology, natural products, pharmacology, synthesis  

Geneviève Sauvé, PhD  
(California Institute of Technology)  
*Professor*  
Materials and energy, organic chemistry, physical chemistry, functional polymers, nanoscale morphology, organic electronics, solar energy conversion, structure-property relationships  

Daniel A. Scherson, PhD  
(University of California, Davis)  
*Frank Hovorka Professor of Chemistry*  
Analytical chemistry, materials, physical chemistry, photochemistry, electrochemistry  

Rekha R. Srinivasan, PhD  
(Case Western Reserve University)  
*Senior Instructor*  
Analytical chemistry, biophysical chemistry, organic chemistry, chemical education  

Gregory P. Tochtrop, PhD  
(Washington University Medical School)  
*Professor*  
Biochemistry, biophysical chemistry, chemical biology, medicinal chemistry, organic chemistry, bioorganic chemistry, synthesis  

Blanton S. Tolbert, PhD  
(University of Rochester)  
*Rudolph and Susan Rense Professor of Chemistry*  
Biochemistry, biophysical chemistry, structural biology  

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**Lecturers**  
Badru-Deen Barry, PhD  
(Michigan State University)  
*Full-Time Lecturer*  
Donald Bellew, PhD  
(University of Southern California)  
*Full-Time Lecturer*  
Brian Fitch, PhD  
(The Ohio State University)  
*Full-Time Lecturer*  
Benjamin Sturtz, PhD  
(Case Western Reserve University)  
*Full-Time Lecturer*  
Inorganic Chemistry  

**Research Faculty**  
Mikhail D. Linetsky, PhD  
(Academy of Science of Ukraine)  
*Research Professor*  
Biochemistry, chemical biology, protein chemistry, post-translational protein modification, proteomics  

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**Secondary Faculty**  
Paul Carey, PhD  
(University of Sussex, UK)  
*Professor, Department of Biochemistry*  
Biochemistry, biophysical chemistry, microscopy/imaging, spectroscopy  

Chris Dealwis, PhD  
*Associate Professor, Department of Pharmacology*  
Biochemistry, biophysics, enzyme catalysis, pharmacology, proteins  

Thomas Gerken, PhD  
(Case Western Reserve University)  
*Professor, Division of Pediatric Pulmonology*  
Biochemistry, biophysical chemistry, chemical biology, glycosylation, protein chemistry, protein structure  

Burcu Gurkan, PhD  
(University of Notre Dame)  
*Assistant Professor, Chemical Engineering*  
Chemical Engineering  

Thomas Kelley, PhD  
(University of Notre Dame)  
*Associate Professor, Division of Pediatric Pulmonology*  
Biochemistry, medicinal chemistry, cellular biology, pharmacology  

Lydia Kisley, PhD  
(Rice University)  
*Assistant Professor, Department of Physics*  
Experimental biophysics, soft condensed matter physics, microscopy, interfacial/surface science, nanoscience, physical chemistry/chemical physics, signal processing, image analysis
Emeritus Faculty
Alfred B. Anderson, PhD
(Johns Hopkins University)
Emeritus Professor
Materials, physical chemistry, electrocatalysis, interfacial phenomena, catalysis, theoretical chemistry

Mary D. Barkley, PhD
(University of California, San Diego)
Emeritus Professor and M. Roger Clapp University Professor of Arts and Sciences
Analytical chemistry, biochemistry, biophysical chemistry, medicinal chemistry, photochemistry, physical chemistry, theoretical chemistry

Malcolm E. Kenney, PhD
(Cornell University)
Emeritus Professor and Hurlbut Professor of Chemistry
Biochemistry, inorganic chemistry, materials and energy, organometallic chemistry, bioinorganic chemistry, computational chemistry, drug delivery, dyes and pigments, medicinal chemistry, nanotechnology, organosilicon chemistry, photochemistry, photodynamic therapy, polymers

Barry Miller, PhD
(Massachusetts Institute of Technology)
Frank Hovorka Professor Emeritus of Chemistry
Physical chemistry, electrochemistry

Anthony J. Pearson, PhD
(University of Aston, Birmingham, England)
Rudolph and Susan Rense Professor Emeritus of Chemistry
Organic chemistry, organometallic chemistry, catalysis, natural products, synthesis

Terry Swift, PhD
Professor Emeritus of Chemistry
Analytical chemistry

Fred L. Urbach, PhD
(Michigan State University)
Professor Emeritus of Chemistry
Analytical chemistry, biochemistry, inorganic chemistry, bioinorganic chemistry, catalysis

Michael G. Zagorski, PhD
(Case Western Reserve University)
Professor Emeritus of Chemistry
Biochemistry, biophysical chemistry, chemical biology, organic chemistry, beer brewing, bioorganic chemistry, drug delivery, NMR, structural biology

Programs
- Chemical Biology, BA
- Chemistry, BA
- Chemistry, BS
- Chemistry, Minor
- Chemistry, MS
- Chemistry, PhD

Dual Degrees
- Undergraduate Programs toward Graduate or Professional Degrees