

RESEARCH CENTERS

Department of Chemistry faculty are leaders or collaborators in CMU's many research centers:

Biomolecular Design Institute

Center for Atmospheric Particle Studies

Center for Macromolecular Engineering

Center for the Mechanics and Engineering of Cellular Systems

Center for Molecular Analysis

Center for Complex Fluids Engineering



Center for Nucleic Acids Science and Technology

Center for Polymer-Based Protein Engineering

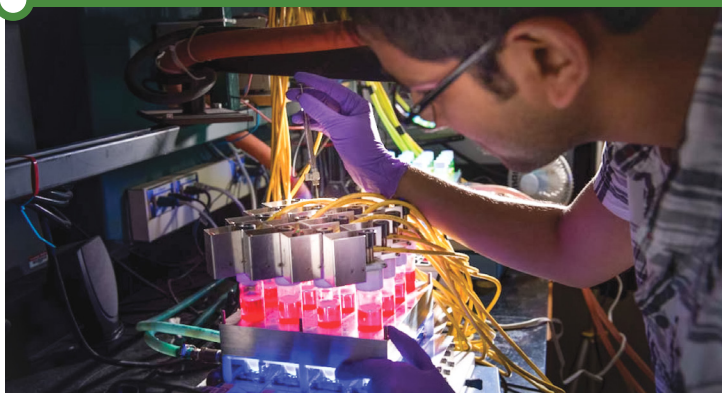
Institute for Green Science

Molecular Biosensors and Imaging Center

Pittsburgh Supercomputing Center

Scott Institute for Energy Innovation

Steinbrenner Environmental Institute for Education and Research



Atmospheric, Green & Environmental Chemistry

Biological Chemistry

Catalysis & Energy

Materials & Nanoscience

Physical, Analytical & Theoretical Chemistry

cmu.edu/chemistry

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CONTACT

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Graduate Programs Specialist
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 @CMU_Chem

FACULTY RESEARCH INTERESTS



ASHOK AJAY

Assistant Professor
as of June 2020

Quantum engineering, quantum computation and control, nuclear magnetic resonance (NMR) spectroscopy, electron spin resonance (ESR) spectroscopy, quantum chemistry, automation driven chemistry



BRUCE ARMITAGE

Professor & Co-Director,
Center for Nucleic Acid
Science and Technology

Bioorganic chemistry, fluorescent dyes, DNA nanotechnology, molecular evolution, peptide nucleic acids, molecular recognition of DNA/RNA, G quadruplexes



STEFAN BERNHARD

Professor

Luminescent materials, solar fuels, organic photovoltaics, organic light emitting devices, circular polarized luminescence



MARK BIER

Professor and Director,
Center for Molecular Analysis

Mass spectrometry instrument development, heavy ion MS, superconducting tunnel junction MS, development of new ionization techniques, mechanospray ionization, biophysical chemistry, environmental chemistry, water analysis by MS



EMILE BOMINAAR

Associate Research Professor

Electronic structure, transition-metal complexes, metal clusters, theory, computational, density functional theory, exchange interactions, hyperfine interactions, Mössbauer spectroscopy, magneto optical spectroscopy, magneto chemistry, bioinorganic chemistry



MARCEL BRUCHEZ

Professor of Biological
Sciences & Chemistry and
Director, Molecular Biosensor
and Imaging Center

Fluorescence, biological microscopy, imaging, light-harvesting structures, biosensors, single molecule biophysics, protein translation, protein folding, protein trafficking



TERRENCE COLLINS

Teresa Heinz Professor in
Green Chemistry and Director,
Institute for Green Science

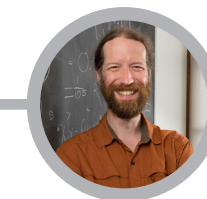
Green chemistry, green oxidation catalysis in water, inorganic chemistry, biomimetic chemistry of peroxidase enzymes, mechanisms of oxidation catalysis, novel approaches to water purification



SUBHA DAS

Associate Professor

Organic synthesis, nucleic acids chemistry, RNA biochemistry, RNA-protein recognition, nanotechnology



NEIL DONAHUE

Lord University Professor in
Chemistry, Professor of Chem.
Engineering and Engineering & Public
Policy and Director, Steinbrenner
Institute for Environmental
Education & Research

Atmospheric chemistry, organic aerosol, kinetics, particle nucleation & microphysics, reaction dynamics, radical-molecule reactivity, ozonolysis, mass spectrometry



ROBERTO GIL

Research Professor and
Director, NMR Facility

Nuclear magnetic resonance spectroscopy, residual dipolar couplings, residual chemical shift anisotropy, anisotropic polymer gels, natural products, characterization of nucleic acids, peptides, synthetic polymers and small molecules in general



YISONG (ALEX) GUO

Assistant Professor

Spectroscopy, bioinorganic chemistry, Mössbauer and EPR spectroscopy, synchrotron radiation techniques, synchrotron Mössbauer, metalloproteins, enzyme mechanisms, transition metal complexes, electronic structures, density functional theory



MICHAEL HENDRICH

Professor

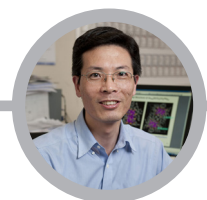
Spectroscopy, biophysical chemistry, enzymatic mechanisms, bioinorganic chemistry, metalloenzymes



OLEXANDR ISAYEV

Assistant Professor
as of January 2020

Computational chemistry, machine learning, deep learning, AI, cheminformatics, computational drug discovery, materials informatics, molecular design



RONGCHAO JIN

Professor

Nanoscience, nanoparticles, synthesis, catalysis, optics



ANNA KIETRYS

Assistant Professor
as of January 2020

Chemical biology, RNA structure & function, RNA-driven cell signalling, epitranscriptomics, RNA ageing, neurodegeneration, RNA-protein interactions



HYUNG KIM

Professor

Theoretical and computational chemistry, equilibrium and nonequilibrium statistical mechanics, computer simulations, chemical reactions and spectroscopy in solution, green solvents, supercapacitors, multi-domain proteins



TOMASZ KOWALEWSKI

Professor

Physical chemistry, atomic force microscopy, proximal probe techniques, organic electronics, nano-structured materials, nanographene, self-assembly of organic materials, characterization of nanostructures, device fabrication and characterization



MARIA KURNIKOVA

Associate Professor

Theory, computational chemistry, biophysical chemistry, molecular modeling, continuum electrostatics, drift-diffusion models, ion channels, membrane receptors, signal transduction, membrane protein structure-function relations, flexibility and rigidity in protein dynamics



DANITH LY

Professor and Director,
Biomolecular Design
Institute

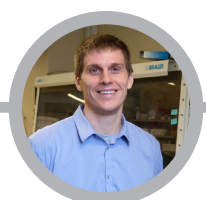
Bioorganic chemistry, chemical biology, gene regulation, cellular delivery, protein engineering, molecular self-assembly



KRZYSZTOF MATYJASZEWSKI

J. C. Warner University Professor
of Natural Sciences and Director,
Center for Macromolecular
Engineering and Co-Director,
Center for Polymer-Based Protein
Engineering

Polymer synthesis, controlled/living polymerization, macromolecular engineering, bio-related polymers, organic/inorganic hybrids, catalysis, green chemistry



KEVIN NOONAN

Associate Professor

Alternative energy, organic semiconductors, fuel cells, gas separation, catalysis, synthetic chemistry, main-group chemistry, polymer synthesis, organometallic chemistry



LINDA PETEANU

Professor and
Department Head

Photophysics, laser spectroscopy, microscopy, Stark spectroscopy, conjugated materials, nucleic acids, fluorescent labels, plasmonics



RYAN SULLIVAN

Associate Professor of
Chemistry & Mech. Engineering
and Associate Director,
Institute for Green Science

Atmospheric chemistry, aerosol instrumentation, single-particle analysis, mass spectrometry, laser spectroscopy, heterogeneous chemistry, combustion, particle hygroscopicity, cloud nucleation, aerosol-cloud-climate interactions



STEFANIE SYDLÍK

Assistant Professor

Polymer science, materials chemistry, biomaterials, regenerative medicine, graphene oxide, functional graphenic materials



NEWELL WASHBURN

Associate Professor of
Chemistry and Biomedical
Engineering

Biomaterials, materials chemistry, polymer science, tissue engineering



DAVID YARON

Professor

Theory, computational chemistry, semi-empirical quantum chemistry, electronic structure theory, materials theory, photophysics, spectroscopy

CARNEGIE MELLON UNIVERSITY

The only top 25 university founded in the 20th century, Carnegie Mellon University has rapidly evolved into an internationally recognized institution with a distinctive mix of world-class educational and research programs. More than 8,000 undergraduate and graduate students enjoy exceptional opportunities for innovation and interdisciplinary research toward finding meaningful solutions to significant problems of society.

PITTSBURGH

Pittsburgh ranks in the top 10 on lists for liveability, jobs, and affordability, including ranking among the top 10 U.S. cities for millennials. The New York Times calls Pittsburgh "a tech hub." Excellence in education, healthcare, culture and environment lead to a #2 ranking in the U.S. by the Economist Intelligence Unit's report.