

RESEARCH CENTERS

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

Biomolecular Design Institute

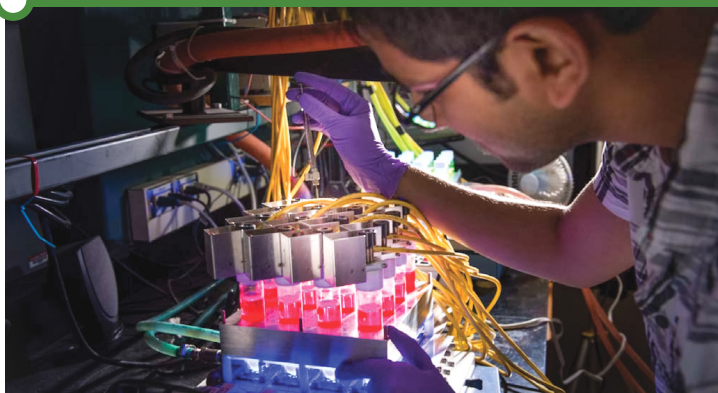
Center for Atmospheric
Particle Studies

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

CONTACT

Carnegie Mellon University
Department of Chemistry
4400 Fifth Avenue
Pittsburgh, PA 15213
412.268.1062

Linda Peteanu

Department Head & Professor
peteanu@cmu.edu
412.268.1327

Graduate Program Office

chemgradoffice@andrew.cmu.edu
412.268.3150



Inquiries concerning the application of and compliance with this statement should be directed to the university ombudsman, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-1018.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.

**Atmospheric, Green &
Environmental Chemistry**

Biological Chemistry

Catalysis & Energy

**Materials
& Nanoscience**

**Physical, Analytical &
Theoretical Chemistry**

cmu.edu/chemistry

FACULTY RESEARCH INTERESTS



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,
Insitute for Green Science

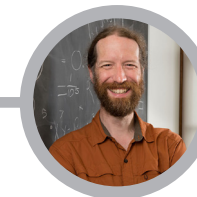
Green chemistry, green oxidation
catalysis in water, inorganic
chemistry, biomimetic chemistry
of peroxidase enzymes,
mechanisms of oxidation
catalysis, novel approaches to
water purification



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

Associate 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

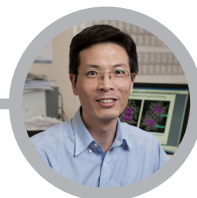
Spectroscopy, biophysical
chemistry, enzymatic
mechanisms, bioinorganic
chemistry, metalloenzymes



OLEXANDR ISAYEV

Assistant Professor

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

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
materi- als, 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

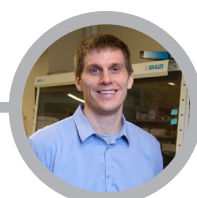
Bioorganic chemistry,
chemical biology, gene
regulation, cellular delivery,
protein engineering,
molecular self-assembly



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 SYDLIK

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.