Chemistry

Chemistry is called the central science because it not only impacts virtually all fields of science and technology but also because it is a central contributor to the modern life that society enjoys.

The PhD Program in Chemistry at the City University of New York (CUNY) provides students with a strong foundation in all areas of chemistry: analytical, biological, inorganic, materials, nano, organic, polymer, and physical.

CUNY prides itself on the diversity of its faculty and students, in fact it received the 2017 Stanley C. Israel Award for Advancing Diversity in the Chemical Sciences. Each student chooses a research mentor from over 100 members of the CUNY doctoral faculty in Chemistry distributed among seven CUNY campuses and the CUNY Advanced Science Research Center that fosters interdisciplinary interactions. A flexible curriculum allows each student to personalize the coursework to their specific needs. Additional training in professionalism, safety, pedagogy, and career opportunities are provided to ensure your career success.

Research Areas

- Analytical Chemistry
- Biochemistry
- Biophysics
- Chemical Biology
- Computational Chemistry

- Inorganic Chemistry
- Materials Chemistry
- Medicinal Chemistry
- Nanoscience
- Organic Chemistry

- Organometallic Chemistry
- Polymer Chemistry
- Photochemistry
- Physical Chemistry
- Radiochemistry
The PhD is a research degree

The design principle that drove CUNY’s curriculum reform is the fact that the PhD is a research degree earned in the laboratory not the classroom.

Our simple, flexible curriculum allows students to start their thesis research in their first semester, complete their classroom coursework in the first year, and develop the professional and leadership skills necessary to be competitive in today’s job market.

We provide innovative courses including Chem 79051, a nanofabrication laboratory taught in the clean rooms of the ASRC.

Student comments

The chemistry Ph.D program at CUNY has allowed me to pursue my interest. I have greatly benefited from my experience with my mentor, professors and fellow students.

Zhantong Mao (PhD 2015)

CUNY is dense with fantastic faculty, administrators and fellow students that collectively engender a strong likelihood of success.

Douglas Achan (PhD 2015)

Curriculum

• five courses
• two laboratory rotations
• professional development
• original research proposal

Innovative courses
Chem 79051 “The Nanofab Lab”
CUNY Science Scholars

All students admitted to the PhD Program in Chemistry are awarded a CUNY Science Scholarship. This five-year award allows our student to concentrate on their research.

CUNY Science Scholars spend the first year at the CUNY Graduate Center taking courses and learning about the research opportunities available to them. There is no teaching in year one. Students select a mentor and move to their mentors campus by the end of year one.

Years 2-5 are spent at a CUNY campus focused on their dissertation research and perhaps teaching.

Parental Accommodation

In recognition of the challenges of balancing the demands of doctoral study and parenting a new child, the Graduate Center’s Parental Accommodation Policy supports graduate student parents in meet their family care obligations while they pursue their academic goals. The policy assists doctoral students immediately prior to and/or immediately following the birth or adoption of a young child by providing a semester of teaching reduction.

CUNY Science Scholarship

- five year support package
- no teaching in first year
- competitive stipend
- low-cost health insurance
- tuition remission
CUNY offers students the opportunity to do cutting-edge chemical research in a supportive program that has the feel of a small college while living in one of the world’s most dynamic cities. The PhD Program in Chemistry is unique amongst its peers in that it is a consortium of seven campuses throughout New York City. While all students receive their degree from the CUNY Graduate Center, they do their research at one of the CUNY colleges or the Advanced Science Research Center. The size of CUNY offers the resources to do world-class science while working at a campus with a small college feel.

Research Centers

The jewel in the crown of CUNY’s multi-billion dollar investment in interdisciplinary scientific research is the CUNY Advanced Science Research Center (http://asrc.cuny.edu). Brimming with state-of-the-art instrumentation and expertise in nanoscience, structural biology, photonics, environmental science, and neuroscience, it is open to all CUNY students and faculty. This collaborative resource augments the resources and instrumentation found on each of the CUNY campuses. In addition, students further their research efforts using the CUNY High Performance Computing Center (http://www.csi.cuny.edu/cunyhpc/).
Analytical Chemistry
Prof. Robert P. Nolan, Subdiscipline Chair
RNolan@gc.cuny.edu

Publications

A. Bae, J.H., Wang, D., Hu, K., Mirkin, M.V.


Analytical Chemistry is the science of measurement that focuses on the qualitative and quantitative analysis of chemicals. All types of instrumental analysis and electrochemistry can be used for the identification and quantitation of analytes. The analysis may require the separation of complex mixtures using various types of chromatography, data analysis, chemometrics and improved experimental design. Modern analytical methodologies can at times separate, identify and quantify the chemicals present in complex mixtures. Analytical chemistry is used in virtually all industries, government agencies, studies of agents in the environment and forensics. In the American Chemical Society’s 2012 work survey, analytical chemistry was the most popular chemical specialty.

Research Areas

- Spectroscopy
- Environmental Chemistry
- Art Conservation
- Instrument development
- Electroanalytical Chemistry
- Forensics

Metabolomics and bioactivities analysis of medicinal fruits by Prof. Kennelly (Lehman College)

Surface Enhanced Raman Spectroscopy of yellow pigments in fine art masterpieces by Prof. Lombardi (City College)
Inorganic Chemistry covers the synthesis and properties of compounds across the entire periodic table. This includes discrete coordination and organometallic compounds as well as nanoscale minerals. Eighteen faculty research groups at CUNY are studying various aspects of inorganic chemistry. This includes its application in nanoscience, its importance in biological systems, its role in catalysis, and its use in clinical radiochemistry.

### Publications


### Research Areas

- Coordination Chemistry
- Synthesis and catalysis
- Material science
- Nanoscience
- Organometallic chemistry
- Bioinorganic chemistry
- Radioinorganic chemistry
- Surface science and catalysis
Molecular Biophysics

Prof. Thomas Kurtzman, Subdiscipline Chair
simpleliquid@gmail.com

Molecular Biophysics seeks to understand essential biological processes in terms of physical chemistry. CUNY has over 30 faculty working in this area. Research interests include the mechanisms of signal transduction in cells, protein dynamics by neutron scattering and NMR, experimental and computational analysis of membrane protein structure and dynamics, and protein design. Students are encouraged to contact an individual faculty member to explore different research opportunities.

Research Areas

- Biophysical mechanisms of ligand binding
- Structural Biology
- Neutron scattering
- X-ray Crystallography
- Protein NMR
- Computational biophysical chemistry
- Enzymology
- Biotechnology

Publications


ssNMR studies of plant-based polymer feedstocks by Prof. Stark (City College)

Protein–RNA interactions in the human spliceosome revealed by Prof. Nancy Greenbaum (Hunter College)
Nanotechnology and Materials Chemistry deals with innovation, design and discovery of materials for specific functions in the size regime, typically < 100 nm, in which physical properties (e.g. optical, electronic) are often significantly affected by size and structure. Nanotechnology has many potential applications, and continues to impact medicine, energy technology and electronics. The Advanced Science Research Center (ASRC) offers access to wide variety of techniques and training, enabling students to acquire a formidable skill set in materials fabrication and characterization.

Research Areas

- Nanotechnology
- Surface chemistry and catalysis
- Quantum nanostructures
- Light harvesting materials

- Materials Science
- Soft Materials and self-assembly
- Energy technology
- Nanobiotechnology and nanomedicine

Publications


Organic Chemistry

Prof. Ryan Murelli, Subdiscipline Chair
rpmurelli@brooklyn.cuny.edu

Publications


Research Areas

- Organic Synthesis
- Bioorganic Chemistry
- Medicinal Chemistry
- Catalysis
- Organometallic Chemistry
- Materials Science
- Carbohydrate chemistry
- Synthetic methodology
- Natural products
Physical Chemistry

Prof. Jianbo Liu, Subdiscipline Chair
Jianbo.liu@queens.cuny.edu

Physical Chemistry focuses on the applications of state-of-the-art experimental and computational techniques and equipment, and theories of physics to the study of chemical and biological systems. With over thirty experimental and theoretical physical chemistry faculty, physical chemistry research ranges from spectroscopy, kinetics and dynamics to material science, energy conversion, and life science.

Publications


B. Jang, S., Voth, G.A. Can quantum transition state theory be defined as an exact $t = 0^+$ limit? Journal of Chemical Physics, 2016, 144, 084110.


Research Areas

- Spectroscopy
- Kinetics and dynamics
- Fuel chemistry
- Biophysical Chemistry
- Physical processes in nanomaterials and nanostructures
- Energy conversion and storage
- Computational Chemistry
- Theoretical developments
- Chemical & dynamical processes in solution
Polymer Chemistry

Prof. Nan-Loh Yang & Michal Kruk, Subdiscipline Chairs
NanLoh.Yang-cepm@csi.cuny.edu
Michal.Kruk@csi.cuny.edu

Polymer Chemistry is a multidisciplinary science that deals with the chemical synthesis and chemical properties of macromolecules. Over fifteen faculty members conduct research in all areas of polymer chemistry from syntheses to application to nanosystems. Our students go on to careers in industry (Merck, 3M, Agilent) Government (Navy & Army Research Labs) and academia (SUNY Buffalo, Tsinghua, China).

Publications


Research Areas

• Polymer Synthesis
• Biopolymers
• Medical Applications
• Materials Science
• Nanotechnology
• Computation & Simulation
Dr. Akins has been a Professor of Chemistry at The City College of New York since 1981, and director of the CUNY-Center for Analysis of Structure and Interfaces since 1988.

Daniel L. Akins, Ph.D.
Professor & Chair of Chemistry and Biochemistry
The City College
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www.sci.ccny.cuny.edu/~akins

2014- current  Professor & Chair, Department of Chemistry and Biochemistry.
1988-2015  Director, CUNY--Center for Analysis of Structures and Interfaces (CASI).
1981-2015  Professor of Physical Chemistry.
1979-1981  Senior Scientist, Polaroid Corp.
1968  Ph.D.: University of California, Berkeley

Publications


"Controllable modification of electronic Structure of Carbon-Supported Core–Shell Cu@Pd Catalysts for formic acid oxidation," Ren, Mingjun; Zhou, Yi; Tao, Feifei; Zou, Zhiqing; Akins, Daniel; Yang, Hui, J. Phys. Chem. C 118, 12669–12675 (2014).


Research Interests

Keywords:
Syntheses of semiconductor and magnetic oxide nanoparticles and nanorods; spectroscopic and dynamical investigations of spontaneous and nonlinear laser Raman scattering by monomeric and aggregated molecules on surfaces; excited state dynamics and determination of photophysical parameters for cyanine dyes and donor-acceptor Systems; quantum chemical calculations of porphyrins and dye molecules.
Dr. Teresa J. Bandosz

Publications


Research Interests

Keywords: nanomaterials, Graphene, separation, energy storage, sensing, photoactivity

Dr. Bandosz’s research focuses on development of new nanoengineered materials for environmental and energy related applications. The research involves development of cutting edge carbonaceous nanomaterial for energy storage, visible light catalysts for oxygen reduction or water splitting, conductivity based toxic gas sensors, and decontaminants for chemical warfare agents. We also work on the design of efficient separation media for removal of pollutants form gas and liquid phases. The materials synthesized and investigated in our lab include: nanoporous carbons, graphite, graphene oxide, graphene, carbon nanotubes, Metal Organic Frameworks (MOFs), nanoporous metal (hydr)oxides, g-C3N4 and various composites.
Prof. Biddinger is a chemical engineer interested in green chemistry and sustainable engineering topics utilizing electrochemistry, catalysis and novel solvents like ionic liquids.

Dr. Elizabeth J. Biddinger, PhD
Assistant Professor
Department of Chemical Engineering
City College of New York
140th St. and Convent Ave., ST-311
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ebiddinger@ccny.cuny.edu
http://ebiddinger.ccny.cuny.edu/

2016 - current  Assistant Professor, CUNY Graduate Center Chemistry PhD Program
2012 - current  Assistant Professor, CCNY Chemical Engineering
2010 - 2012  Postdoctoral Fellow, Georgia Institute of Technology
2010  PhD Chemical Engineering, The Ohio State University

Research Interests

**Keywords:** Electrochemistry, Catalysis, Electrocatalysis, Electrodeposition, Ionic Liquids, Carbonaceous Materials, Separations, Green Chemistry

The Biddinger Research Group utilizes a toolbox of electrochemistry, catalysis and ionic liquids to tackle a variety of problems associated with green chemistry and sustainable engineering. Current projects include investigation of copper electrocatalysts for CO₂ electroreduction for synthesis of fuels and chemicals, electrochemical hydrogenation and hydrogelenolysis of biomass for synthesis of fuels and chemicals, development of switchable electrolytes as reversible safety switches in batteries, electrodeposition in ionic liquids as a means of metal recovery and nanoparticle formation, and functionalization of carbons with ionic liquids as adsorbents in air filtration.

Publications

Dr. Mark R. Biscoe

Prof. Biscoe is an organic/organometallic chemist interested in the development of new reaction methodologies for application in drug discovery.

Research Interests

Keywords: Transition metal catalysis, Organic synthesis, Asymmetric synthesis

Broadly, research in the Biscoe group focuses on catalysis. The two major types of catalysis in which we are interested are transition metal catalysis and macromolecular catalysis. Our primary goals involve the development of practical and reliable processes for the construction of C–C and C–X (X = heteroatom) bonds. We are particularly interested in the development of new processes for the formation of common structural motifs of importance in medicinal chemistry and drug discovery.

Publications


2009- current  Professor, City College of New York
2005-2008  NIH Postdoctoral Fellow, MIT
2000-2005  PhD, Columbia University
Dr. Zimei Bu's group studies the structure and dynamics of protein complexes in cell signaling, using neutron and X-ray scattering.

Publications


Research Interests

**Keywords:** Biophysics; Cell Signaling; Structure; Dynamics; Kinetics; Molecular Recognition; X-ray Scattering; Neutron Scattering

Our group studies the structure and dynamics of cell signaling proteins and macromolecular complexes that regulate cell adhesion, and the intracellular trafficking of membrane receptors and ion channels. These proteins function as molecular machines and switches that can fail to work properly for various reasons, causing diseases such as cancer. We employ biochemical, biophysical, and structural biology techniques, in particular small angle neutron and x-ray scattering (SAXS and SANS), to study the interactions of these proteins. We also develop methods of utilizing quasielastic neutron scattering, in particular neutron spin echo spectroscopy (NSE) to study protein dynamics and protein domain motions. We have developed a theoretical framework using non-equilibrium statistical mechanics to interpret the NSE data. These methods allow us to see, for the first time, the dynamics of protein complexes on nanometer scales. NSE fills an important information gap in our ability to study protein motion on sub-microsecond time scales and on nanometer length scales.
Research Interests

Keywords: Actinides, f-block, Lanthanides, Luminescence, Mentoring relationships, Metal oxides, Nuclear fuel cycle, Radiochemistry, Redox chemistry

His research can be broadly defined as the fundamental chemistry of f-block and group VII metals. There are presently two major research aims associated with this theme:

1. To develop the use of luminescence as a tool to understand the chemical speciation of lanthanides and actinides in the environment, terrestrially and extra-terrestrially.
2. To use soluble metal oxides (polyoxometalates) to fundamentally understand how actinide ions interact with minerals at a molecular level.

He also studies the mentoring relationship and is working towards codifying co- and multi-mentorship models in interdisciplinary research settings.
Dr. Elise Champeil

Prof. Champeil is a synthetic chemist interested in the DNA alkylating drug Mitomycin C (MC). She synthesized MC-DNA Interstrand crosslinks to determine how the local structure of these adducts is responsible for the different biochemical responses produced by cancer cells upon treatment.

Publications

4- Bose A., Surugihalli C., Pande P., Champeil E., Basu A. K. “Comparative error-free and error-prone translesion synthesis of the N² -2'-deoxyguanosine adducts formed by mitomycin C and its metabolite, 2,7-diaminomitosene, in human cells” Chemical Research in Toxicology, 29, 2016 933.

Research Interests

Synthesis of Mitomycin C and Decarbamoyl mitomycin C DNA adducts: Our aim is to synthesize DNA interstrand crosslinks generated by decarbamoyl mitomycin C (DMC) and mitomycin C (MC) (MC α-ICL and DMC β-ICLs). In addition, the role of p21 in the upstream p53-independent signaling pathway in response to these crosslinks is examined.

Analysis of drugs (recreational and medicinal) in bio fluids using NMR spectroscopy.
Dr. Yu Chen

The Chen group is interested in late transition metal catalysis, heterocyclic chemistry and asymmetric catalysis.

Yu Chen
Assistant Professor
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http://chem.qc.cuny.edu/~ychen/homepage.htm

2009-current
Current position

2007-2009
Postdoc

1999-2004
PhD

Publications


Research Interests

Keywords: late transition metal catalysis, heterocyclic chemistry, asymmetric catalysis

The Chen group is working in the area of late transition metal mediated catalysis, heterocyclic chemistry and asymmetric catalysis. They have been developing new synthetic methods for biologically interesting frameworks using Lewis acid mediated transformations of alkynes, and have successfully developed new atom-economical routes for the synthesis of a variety of core structures, including isoxazoles, 2-azafluorenones, isoquinolines, indenones, dibenzocyclohepten-5-ones, and etc.
Dr. Xi Chen

Dr. Chen is recognized as a leading scientist in the field of energy harvesting and smart materials. His work has led to a number of publications in leading scientific and popular journals, and has been featured in mainstream media, such as The New York Times, The Wall Street Journal, the Washington Post, NBC News, BBC, and many others.

Xi Chen
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2016- current
Current position
2012-2016
Postdoc, Columbia University
2005-2007
PhD, Stevens Institute of Technology

Publications

Xi Chen, Davis Goodnight, Zhenghan Gao, Ahmet-Hamdi Cavusoglu, Nina Sabharwal, Michael Delay, Adam Driks and Ozgur Sahin, Scaling up nanoscale water-driven energy conversion into evaporation-driven engines and generators, Nature Communications, 2015, 6, 7346
Xi Chen, L Mahadevan, Adam Driks and Ozgur Sahin, Bacillus spores as building blocks for stimuli-responsive materials and nanogenerators, Nature Nanotechnology, 2014, 9, 137-141
Xi Chen, Jinwei Li, Guitao Zhang and Yong Shi, PZT nano active fiber composites for acoustic emission detection, Advanced Materials, 2011, 23, 3965–3969
Xi Chen, Shiyou Xu, Nan Yao and Yong Shi, 1.6 Volt Nanogenerator for mechanical energy harvesting using PZT nanofibers, Nano Letters, 2010, 10, 2133-2137.

Research Interests

Keywords: Evaporation energy harvesting, water-responsive materials, nanotechnology.

Professor Chen develops the next generation of sensors, actuators, energy conversion and storage devices by using novel nanostructured and bio-inspired functional materials. His recent work on water-responsive materials and evaporation-driven engines opens up a new field in energy harvesting and provides opportunities towards solving current challenges in sustainable energy, energy storage, clean water, robotics, and medical technologies.
Dr. Junyong Choi

Junyong Choi is a synthetic and computational medicinal chemist. His research focuses on development of therapeutic candidates by applying organic synthesis, computer-aided drug design, and chemical biology.

Junyong Choi
Assistant Professor
Department of Chemistry and Biochemistry
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www.choiresearchlab.com

2017- current Assistant Professor, Queens College
2012-2017 Sr. Research Associate, Scripps Florida
2009-2012 Postdoc, Scripps Florida
2009 PhD, Stony Brook University

Publications

JY Choi, et. al., Comparative structural analysis and molecular design for the development of highly potent and selective agents targeting Matrix Metalloproteinase 13, J. Med. Chem., 2017, 60, 5816-5825


Research Interests

Keywords: Medicinal Chemistry, Organic Synthesis, Computer-aided Drug Design, Chemical Biology

My scientific objective is to develop specific, target-directed therapeutic candidates for human diseases. My laboratory integrates organic synthesis, medicinal chemistry, computer-aided drug design, and chemical biology to discover bioactive chemical probes. We are particularly interested in discovery of small molecule agents with novel mechanism of action to elucidate specific functions of biological targets. The discovery and techniques established in my laboratory will advance the chemical science in biomedical research for the development of therapeutics.
Dr. Maria Contel

Maria Contel is an inorganic synthetic chemist focused on the rational design of metallodrugs and homogeneous catalysts. She leads a multidisciplinary group involved in synthesis, nanotechnology, biochemical and biological studies.

Research Interests

Keywords: Organometallic Chemistry, Medicinal Inorganic Chemistry, Homogeneous Catalysis

We synthesize compounds based mostly on gold, ruthenium, and titanium to study their potential as anticancer and antimicrobial agents. We study their biological activity in vitro and in vivo, their modes of action and delivery strategies based on nanotechnology. Catalytic studies focus on recyclable and bimetallic catalysts and on sustainable processes.

Publications


Dr. Melissa A. Deri
Assistant Professor
Lehman College
250 Bedford Park Blvd W
Bronx, NY 10468
melissa.deri@lehman.cuny.edu
http://www.lehman.edu/academics/chemistry/faculty.php

The overarching goal of the Deri Lab is the integration and application of radiochemistry towards tangible benefits to society. We focus on the intersection of radiochemistry and biomedical science, more specifically in molecular imaging and radiotherapy using radioactive metals.

Melissa Deri
Assistant Professor
Lehman College
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Bronx, NY 10468
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http://www.lehman.edu/academics/chemistry/faculty.php

2017- current Assistant Professor, Lehman College
2015-2017 Postdoctoral Fellow, Lehman College
2015 Postdoctoral Fellow, Memorial Sloan Kettering Cancer Center
2010-2015 PhD, Hunter College and The Graduate Center, CUNY

Research Interests

Keywords: Radiochemistry, Radiopharmaceuticals, Nuclear Medicine, Radiometals, Chelators, Chemical Education, Pedagogy

Prof. Deri’s research efforts are focused on addressing the following two questions:

How can radioactivity be used to improve human health? Research projects include:
Radiometal chelation studies • Bifunctional chelator development • Radiopharmaceutical design

How can we get more people interested in chemistry? Teaching practices and strategies studied:
Culturally relevant teaching practices • Use of technology in education • Online learning tools • Flipped classroom pedagogy • Active learning strategies

Publications


**Ruel Z. B. Desamero**

Professor  
York College, the Institute of Macromolecular Assembly, and the Graduate Center  
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www.york.cuny.edu/portal_college/rdesamero

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### Publications


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### Research Interests

**Keywords:** vibrational spectroscopy; fluorescence; circular dichroism; temperature-jump techniques; structural biology; protein biochemistry; enzymology

My research is centered on investigating the structural and dynamical aspects of protein-small molecule interactions using techniques such as vibrational spectroscopy and temperature-jump relaxation. One aspect of the work is to understand at the molecular level how protein systems work. Enzyme-substrate interactions have long been recognized as representing an extreme expression of structural complementarities in biological chemistry. Basic research geared towards understanding the inner workings of an enzyme system is important if cures for the diseases caused by a malfunctioning or deficient enzyme are to be found. We have also started investigating the mechanism behind amyloid formation with the goal of synthesizing peptide inhibitors that diminish protein aggregation.
The des Georges lab is interested in the molecular mechanisms of cell regulation. We use cryo-electron microscopy to decipher at the atomic level the function of large macromolecular complexes involved in calcium signaling and in the regulation of protein synthesis.

Amedee des Georges
Assistant Professor, ASRC Structural Biology Initiative
City College, Dept. of Chemistry and Biochemistry
CUNY Advanced Science Center, Room 3.316
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structbio.asrc.cuny.edu

2015- current  Assistant professor, Structural Biology Initiative, CUNY Advanced Science Research Center
Assistant professor, Department of Chemistry and Biochemistry, City College of New York

2008-2015  Postdoc – HHMI / Columbia University – (w/ Dr. Joachim Frank)

2004-2008  PhD – MRC-Laboratory of Molecular Biology, Cambridge, UK – (w/ Drs. Linda Amos & Jan Lowe)

Research Interests

Keywords:
Cell regulation • Cancer • Heart diseases • Biochemistry • Molecular biology • Structural biology • Cryo-electron microscopy • Image analysis • Modeling • Methods development • Translation initiation • Membrane proteins • Calcium signaling

Publications


des Georges et al., Structure of the mammalian ribosomal pre-termination complex associated with eRF1• eRF3• GDPNP, Nucleic acids research, 2013, gkt1279.
Dr. Terry Dowd is involved in two areas of research. One area is the alteration in bone mineral properties in disease. The second project involves alterations in structure–function relationships in the gap junction molecule Connexin in deafness, neuropathy and skin disease.

Publications


Research Interests

My research involves investigating the role of the bone protein osteocalcin in bone mineral diseases such as Pb2+ toxicity, low Mg2+ diets and diabetes. The research involves multiple techniques such as atomic absorption, FTIR Imaging and microCT to investigate alterations in mouse bone mineral properties. The second project involves NMR structural-functional studies of the gap junction molecule Connexin in health and diseases such as deafness, fatal skin disease and neuropathy. The project uses 2D NMR techniques on a high field magnet and electrophysiological techniques characterizing the mutant gap junction channels.
Dr. Dorthe M. Eisele

Dorthe Eisele is a Professor of Chemistry at City College and a member of the Graduate Center. Her research interests are in materials research and nanoscience, with a focus on new materials and design principles for solar energy systems.

Dr. Dorthe M. Eisele
Department of Chemistry, City College Center for Discovery and Innovation Advanced Science Research Center 85 Saint Nicolas Terrace, New York, NY 10031 eisele@ccny.cuny.edu http://eiselegroup.com/ www.cuny.edu/asrc

Current: Assistant Professor, Chemistry, City College of New York, Principal Investigator, CUNY Graduate Center (Chemistry).

Previously: Postdoctoral Associate, Massachusetts Institute of Technology, Cambridge, USA

Dr. rer. nat (Ph.D. equivalent), Humboldt University of Berlin, Berlin, Germany

Selected Publications


Research Interests

**Keywords:** New materials & design principles for solar energy systems; Artificial and biological model systems for light-harvesting (LH) in order to better understand the fundamental processes that govern nature’s highly efficient photosynthetic masterpieces; Collective phenomena found in self-assembled nanoscale systems such as supra-molecular assemblies (Frenkel exciton systems), semiconductor nanostructures (Wannier exciton systems), metallic nanostructures (plasmonic systems), and organic/inorganic hybrid systems; Energy and electron transport processes in nanoscale systems; steady-state and time-resolved spectroscopy combined with microscopy techniques.
Dr. Cherice M. Evans

Physical chemist investigating the effects of local solvent structure on reactivity in near critical point fluids. This work involves experimental and theoretical studies performed at Queens College, the Center for Advanced Microstructures and Devices (Baton Rouge, LA) and Brookhaven National Laboratory (Upton, NY).

Cherice M. Evans
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Publications


Research Interests

Our lab is currently investigating the quasi-free electron energy in near critical point anisotropic fluids with a focus on CO₂, NH₃ and H₂O. The theoretical work on this problem will be performed at Queens College. The experimental work will be performed at the Center for Advanced Microstructures and Devices in Baton Rouge, LA. We are also studying the mobility of electrons through near critical point fluids, with a focus on Ar, Xe, CH₄ and C₂H₆. The theoretical work is being performed at Queens College and at the University of Louisiana at Monroe. The experimental work will be performed at Brookhaven National Laboratory and at Queens College.
Dr. Stephen Philip Fearnley

As a synthetic organic chemist, my research involves development of new methodology for the construction of bioactive natural products: alkaloids, cyclic ether arrays, & C-glycosides.

Stephen Philip Fearnley
Associate Professor
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www.york.cuny.edu/portal_college/sfearnley

2003- current York College
1999-2003 Lamar University
1998-1999 Postdoc, Penn State: Mike Coleman
1995-1997 Postdoc, Penn State: Ray Funk
1988-1992 Ph.D., University of Salford, U.K.

Publications


Research Interests

Keywords: Organic Synthesis • Organic Reactions • Natural Products

• Investigation & use of oxazolone as a useful heterocyclic scaffold for alkaloid synthesis - studies of intramolecular Diels-Alder reactions with oxazolone as dienophile.

• Novel organosilane chemistry for approaches to bioactive ethers - concise assembly of cis-fused bicyclic ether arrays via intramolecular attack of vinylsilanes at tethered oxocarbenium ions. A related silyl-activated Friedel-Krafts process requires an unusual combination of electronic & steric effects.

• Recently completed targets include 2-epi-pumiliotoxin C & deoxyaltholactone. Similar approaches to gephyrotoxin & dysiherbaine are underway.
Dr. Harry D. Gafney
Professor
Queens College
Department of Chemistry, 206 Remsen Hall
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Flushing, NY 11367
Email: harry.gafney@qc.cuny.edu
www.cuny.edu/hgafney

Publications


Research Interests

Keywords: Ru(II) Diimines, Transition Metal Oxides, Photocatalysis, Nanoporous Silica Matrices

Current research focuses on excited state electron-transfer and acid-base chemistry, photocatalysis of multi-electron, multi-proton conversions such as CO2 to CH4 and NOx to N2, synthesis of mixed valent metal oxides in nanoporous silica matrices, absorption and emission properties of tungsten and molybdenum oxides, ground and excited state acid-base properties of tungsten and molybdenum oxides.
Emilio Gallicchio's research is in the area of computational molecular biophysics. He uses advanced computational models to investigate the dynamics and thermodynamics of biological systems.

Publications


Research Interests

- Thermodynamics of protein-protein and protein-ligand binding
- Virtual drug screening
- Protein conformational equilibria
- Statistical thermodynamics of protein folding and misfolding
- Thermodynamics of solvation of biological macromolecules
- Force field development and high resolution protein modeling
- Design of high performance computational chemistry algorithms
- Parallel and distributed computing

2013- current Asst. Professor, Dept. Chemistry, Brooklyn College
2012-2013 Research Professor, Dept. Chemistry, Rutgers University
2001-2012 Associate Director, BioMaPS Institute, Rutgers University
1997-2000 Postdoctoral, Rutgers University
1991-1996 PhD Columbia University, Chemical Physics
Kevin H. Gardner
Director, Structural Biology Initiative
CUNY Advanced Science Center, Room 3.322
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Kevin.Gardner@asrc.cuny.edu
structbio.asrc.cuny.edu • kglab.org

Publications

Y. Guo et al., Coiled-coil coactivators play a structural role mediating interactions in hypoxia inducible factor heterodimerization. J. Biol. Chem., 2015, online now.

V. Ocasio et al., Ligand-induced folding of a two component signaling receiver domain. Biochemistry, 54, 1353-1363.


Research Interests

Keywords: environmental sensing • protein/protein interactions • ligand binding • allostery • NMR spectroscopy • X-ray diffraction • biochemistry • photosensors • cancer • protein engineering
The Gibney Lab uses metalloprotein design to investigate the fundamental engineering of biological systems. These studies provide insight into metal-induced protein folding, heme electrochemistry, and the role of chemically modified hemes in biology.

Research Interests

Keywords: De novo metalloprotein design, inorganic coordination chemistry, biophysics, bioenergetics, electrochemistry

Our research focuses on the role of metal ions in biological systems from both an inorganic coordination chemistry and biophysical perspective. We are currently investigating the role of zinc in controlling gene expressions in human cancer, and the role of heme proteins in cardiovascular disease.
Dr. Dixie J. Goss

Prof. Goss is a professor of Chemistry and Biochemistry and Elion Endowed Scholar

Dr. Dixie Goss
Hunter College Chemistry Dept.
695 Park Ave
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http://www.hunter.cuny.edu/chemistry/faculty/Dixie/goss-group-1/resume

1990- current  Professor of Chemistry
1989-1990  Associate Professor of Chemistry
1984-1989  Assistant Professor
Post-Doc.  U. of Nebraska and U. of Georgia
1975  Ph.D.  U. of Nebraska

Publications

Recruitment of 40S Ribosome to the 3' Untranslated Region (UTR) of a Viral mRNA, via the eIF4F Complex, Facilitates Cap-independent Translation.

Pokeweed antiviral protein, a ribosome inactivating protein: activity, inhibition and prospects.

Rapid kinetics of iron responsive element (IRE) RNA/iron regulatory protein 1 and IRE-RNA/eIF4F complexes respond differently to metal ions.

Eukaryotic initiation factor (eIF) 4F binding to barley yellow dwarf virus (BYDV) 3'-untranslated region correlates with translation efficiency.

Poly(A) binding proteins: are they all created equal?

Research Interests

Keywords: protein synthesis, virus, protein-nucleic acid interactions

We use biophysical approaches to understand how non-coding regions of mRNA regulate function. Miss regulation of protein synthesis is responsible for many diseases including cancer. We are interested in how unique structures in viral RNA allow viruses to take over host cell protein synthesis.
Dr. Michael Green

Dr. Green is a computational chemist, with a principal interest in biophysical problems, especially related to a class of proteins, ion channels, responsible for the nerve impulse, among other things.

Michael E Green
Professor
City College of New York
Dept. of Chemistry
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http://forum.sci.ccny.cuny.edu/people/science-division-directory/b009

Dr. Green has been a faculty member in Chemistry at CCNY since Sept 1966.

Publications


A. M. Kariev, P. Njau, and M. E. Green, "The Open Gate of the Kv1.2 Channel: Quantum Calculations Show The Key Role Of Hydration," Biophys J. (2014). 106, 548-555


Research Interests

Keywords: Quantum calculations, proteins, water structure, hydrogen bonds, salt bridges, membranes, water transport through membranes

Research Strategy: Primarily we carry out quantum calculations on overlapping sections of proteins, such as voltage sensing domains of ion channels, to determine structure, bonding, energetics, and transitions of protein, water, hydrogen bonds, and salt bridges, leading to mechanisms, for example, of sensing voltage.
Dr. Nancy Greenbaum

Prof. Greenbaum is a structural biologist whose research addresses the role of biomolecular structure and function in biochemical activity of noncoding RNA molecules. We incorporate solution NMR, fluorescence techniques, and biochemical approaches in our studies.

Research Interests

Keywords: RNA, spliceosome, NMR

We attempt to answer questions about how RNA molecules fold and interact with other RNA, metal ions, and proteins in order to carry out the complex activity of precursor messenger (pre-m)RNA splicing. This process, by which noncoding intron sequences of pre-mRNA molecules are excised and flanking coding exons are ligated together, is an essential step in preparation of mRNA transcripts prior to translation of their message into protein sequences.

Pre-mRNA splicing in eukaryotic cells is performed by the spliceosome, a dynamic nuclear supramolecular assembly that comprises five recyclable small nuclear (sn)RNA molecules and many proteins. Similarities between spliceosomal snRNAs of and functionally analogous regions of Group II introns, which excise themselves even in the absence of proteins, suggest shared evolutionary ancestry and the likelihood that the spliceosomal reaction is also catalyzed by its RNA components. Using a combination of biochemistry, biophysical, and spectroscopy techniques, we characterize the molecular basis of recognition and conformational dynamic leading RNA splicing in the two systems.

Publications


Popović, M, Greenbaum, NL (2014) Role of helical constraints of the EBS1-IBS1 duplex of a group II intron on demarcation of the 5′ splice site. RNA 20, 24-35.


Popović, M, Nelson, JD, Schroeder, KT, Greenbaum, NL (2012) Impact of base pair identity 5′ to the spliceosomal branch site adenosine on branch site conformation. RNA 18, 2093-2103.
We investigate the structure and function of solid materials at the atomic and molecular level by solid state NMR. Most of these materials have application in renewable energy technologies. I value diversity in the scientific workforce as reflected by my lab group members.

Steve Greenbaum
Position: CUNY Distinguished Professor of Physics
Affiliation Hunter College
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New York NY 10065
Email steve.greenbaum@hunter.cuny.edu
www.hunter.cuny.edu/physics/faculty/greenbaum

1983- current Current position
1997-98 NASA Senior Research Fellow, JPL
1990-91 Fulbright Scholar, Weizmann Institute
1981-83 Postdoc, Naval Research Lab
1976-81 PhD, Brown University

Research Interests
- Keywords:
  Nuclear magnetic resonance, electron paramagnetic resonance, structure of disordered solids battery and fuel cell
  Materials characterization

Publications
- “Review of Recent Nuclear Magnetic Resonance Studies of Ion Transport in Polymer Electrolytes”, Stephen Munoz and Steven Greenbaum, Membranes, 2018, 8, 120; doi:10.3390/membranes8040120


Our research areas are organic chemistry, synthesis, interfacial chemistry, photochemistry, natural products, and nanotechnology.

Alexander Greer
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http://academic.brooklyn.cuny.edu/chem/agreer/FirstPage.html

1999-current
Professor
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718-951-5000 ext 2830
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http://academic.brooklyn.cuny.edu/chem/agreer/FirstPage.html

Research Interests

We focus on synthesis and organic photochemical reactions to study molecular oxygen that are toxic to organisms and damaging to materials. Photo-generating intermediates in a clean and pure fashion is one goal, including the physical isolation of sensitizer and molecules at surfaces to “separate” reactive oxygen species (ROS) that can damage membranes and enzymes. Oxygen-dependent toxic effects are common in nature and our mechanistic studies have also focused on thiophene sulfoxides and mutagenic nitrosamines. We have also synthesized sulfanes related to natural product varacin, such as thianthrene, tetrathiocin, trithiole, and pentathiepin anticancer agents.

Publications


A. A. Ghogare; A. Greer “Using Singlet Oxygen to Synthesize Natural Products and Drugs” Chem. Rev. 2016 (in press).


A. A. Ghogare; D. Bartusik; G. Ghosh; N. Walalawela; I. Abramova; K. A. Cengel; J. M. Miller; T. M. Busch; A. Greer "Photodynamic Therapy by a Device Probe Tip" Photonics, Lasers in Medicine 2015, 4, 362-365.

Elucidation of transition metal-mediated processes undertaken by pathogens and the corresponding immune response by the human body during infection using bioinorganic, biophysical and computational methodologies.

Research Interests

Keywords: Bioinorganic Chemistry, Spectroscopy, Biophysical Chemistry, Magnetic Resonance, Quantum Chemical Calculations

Transition metal homeostasis is one of mechanisms through which the human body combats microbial attack. We are investigating both the processes undertaken by pathogens during invasion of a host cell and the responses executed by the host cell during such an attack. The research projects aim to study the mechanisms of zinc and copper homeostasis, incorporation of native metal ions by metallochaperones, and pathogenic machinery of zinc acquisition. Investigation of these physiological events at the interface of chemistry and biology will provide atomic-level understanding of fundamental processes in the human body during microbial invasion, which will have significant implications for human health and in the design of efficient therapeutics.
Dr. Harding is a organic/medicinal chemist with interests in the design, synthesis and evaluation of ligands for central nervous system receptors.

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2013- current  Associate Professor, Hunter College
2006-2013  Assistant Professor, Hunter College
2004-2006  Postdoctoral Fellow, University of Iowa
1994-1999  Ph.D.

Publications


Research Interests

Keywords: Medicinal chemistry, drug design, organic synthesis, central nervous system, CNS, receptor, serotonin, dopamine
Dr. Yi He
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https://www.jjay.cuny.edu/faculty/yi-he

Publications

He, Y., Concheiro-Guisan, M., Microextraction sample preparation techniques in forensic toxicology, Biomedical Chromatography, 2019, 33, e4444


Kurti, M., He, Y., Silver, D., Giorgio, M., von Lampe, K., Macinko, J., Ye, H., Tan, F., Mei, V., Presence of Counterfeit Marlboro Gold Packs in Licensed Retail Stores in New York City: Evidence from Test Purchases, Nicotine & Tobacco Research, 2018, (Accepted)


He, Y., Microextraction and Its Application to Forensic Toxicology Analysis, LCGC North America, 2017, 35: 14-20

Research Interests

Keywords: Sample preparation; Environmental Analysis, Forensic Analysis

- Counterfeit tobacco product identification through chemical and physical examination using methods such as elemental fingerprint, pollen analysis, packaging and printing analysis
- Micro-scale extraction methods development and application to forensic and environmental analysis
- New electrochemical system used for pollutant treatment
Dr. William Hersh

Dr. Hersh is an organic chemist with current research projects on synthesis of chiral oligonucleotide phosphorothioates and helical disulfide polymers. Specialties include NMR, X-ray crystallography, and DFT calculations.

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http://chem.qc.cuny.edu/~whersh

1989 - current Queens College
1982 - 1989 UCLA
1980 – 1982 Postdoc, UC Berkeley
1980 PhD, Columbia University

Publications


Dr. Edward G. Hohenstein

Edward G. Hohenstein
Assistant Professor
City College of New York
Marshak Science Building, Rm. 1032
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ehohenstein@ccny.cuny.edu
http://www.hohenstein-chem.com

Prof. Hohenstein is a theoretical chemist specializing in the development and implementation of new electronic structure methodology and the application of these methods to problems in excited-state chemistry.

2014- current  Assistant Professor, CCNY
2011-2014  Postdoc, Stanford University
2007-2011  PhD, Georgia Institute of Technology

Publications


Research Interests

*Keywords: Theoretical, Computational, Photochemistry*

The accurate treatment of excited electronic states is a uniquely challenging and important problem in electronic structure theory. We are actively developing new methods for treating excited states as well as highly efficient and scalable implementations of these methods that exploit modern advances in computer hardware. We apply these methods to problems in photochemistry. Processes occurring in the condensed phase, such as excited-state proton transfer, are of particular interest. We are also working to apply similar methodology to design light harvesting complexes.
Qiao-Sheng Hu is Professor and Chair of Chemistry Department at the College of Staten Island. His research is focused on the development of new reactions/processes and catalysts for chemical synthesis including polymer/materials synthesis.

Research Interests

Keywords: catalysis, palladium, cross-coupling reaction, polymerization, conjugated polymers

The Hu group are interested in the development of new catalysts including transition metal and organic catalysts for cross-coupling reactions and addition reactions, and novel reactions/processes from readily available and cost-effective small organic molecules. These new reactions/processes and catalysts have potential applications in chemical synthesis and polymer/materials synthesis. The approach is interdisciplinary, ranging from fundamental understanding of reaction mechanisms, reaction methodology development to polymer/materials synthesis.
Seogjoo Jang is a theoretical and computational chemist. His research expertise includes development of quantum rate theories, quantum dynamics calculation in condensed media, and computational modeling of energy and charge transfer processes in complex environments.

Introduction

Keywords: Quantum Dynamics, Energy Transfer, Electron Transfer, Light Harvesting

Seogjoo Jang combines mathematical formulation and computational approaches to address important issues concerning quantum dynamics calculation and energy/electron transfer processes in complex environments. A particular area of application of these efforts, is theoretical elucidation of efficient light harvesting mechanisms in natural and artificial photosynthetic complexes. These research projects are being supported by the National Science Foundation and the Department of Energy.

Publications

S. Jang, “Generalized quantum Fokker-Planck equation for photoinduced nonequilibrium processes with positive definiteness condition,” Journal of Chemical Physics, 2016, 144, 214102.

S. Jang and G. A. Voth, “Can quantum transition state theory be defined as an exact $t=0^+$ limit?”, Journal of Chemical Physics, 2016, 144, 084110.


Dr. Urs Jans

Dr. Jans is interested in the fate of organic contaminants (e.g., pesticides, flame retardants) in the environment.

Publications


Research Interests

Keywords: Environment, emerging contaminants, abiotic transformation, analytical chemistry

My research program at CCNY is addressing questions concerning environmental organic chemistry, with a focus on the mechanisms through which organic contaminants undergo abiotic transformations in natural aquatic environment (freshwater, seawater). We also determine the concentration of organic contaminants in sediments and soils as a tool to understand their accumulation in the environment.
Jeruzalmi’s group applies X-ray crystallography, supplemented with electron microscopy, to understand these long-standing problems in DNA biology. We also use biochemical studies to inform these approaches and follow up on the resulting insights.


Research Interests

The faithful transmission of genetic information is an important biological imperative. To carry out this function, organisms have evolved processes to replicate their genomes and defend them from attack. We study important mechanisms associated with the processes of DNA replication and repair. The central challenge in understanding these processes stems from the large size of the involved multi-protein DNA complexes; these entities also populate many conformational states. Together, these complications place limits on insights that can be revealed by static crystallographic structures or solution methods alone; both sources of information are essential for defining underlying mechanisms.

To this end, my group applies X-ray crystallography, supplemented with electron microscopy, to understand these long-standing problems in DNA biology. We also use biochemical studies to inform these approaches and follow up on the resulting insights.
Dr. Shi Jin

Dr. Jin is a physical/materials chemist who is working on structure design, synthesis, characterization and optimization of organic optoelectronic materials for improved performance in devices such as organic solar cells, light emitting diodes and field effect transistors.

Shi Jin
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http://www.csi.cuny.edu/faculty/JIN_SHI.html

Publications


Research Interests

Keywords: Soft Matter, organic optoelectronic materials
Dr. Andrei Jitianu

Dr. Jitianu's research is focused on materials chemistry, specifically on sol-gel chemistry with direct applications in anticorrosive, hermetic coatings and nanomaterials for electronic industry.

Keywords: Dr. Jitianu's research goals are to develop new materials or composite materials for hermetic barriers for electronic industry, anticorrosive materials for airspace and automotive industry, hydroxyapatite based nanocomposite for biomedical bone regeneration and prosthetic applications and Layered Double Hydroxides for metal air batteries. Our studies range from the elucidation of early stages of formation of the hybrid materials by sol-gel process to the design of hybrid nanocomposite materials with magnetic, gas-sensing, electric and optical properties. The research of my lab is fully collaborative with national and international universities and is focused to developing a new class of materials called Hybrid Melting Gels for hermetic barriers, anticorrosive and optical applications.

Publications


Andrei Jitianu
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www.lehman.edu/academics/chemistry/prof-jitianu.php

2017- current Professor and Chair
2013-2017 Associate Professor
2008-2013 Assistant Professor
2002-2003 Postdoc University of Orleans, France
2001 PhD, university of Bucharest, Romania
George John is a Professor of Chemistry/the Center for Discovery and Innovation, the City College of New York -CUNY. His research is focused on molecular design of synthetic lipids, membrane mimics, soft nanomaterials, green energy technologies and organic materials chemistry.

Research Interests

Keywords: biobased materials, green chemistry, soft materials, biorefinery, biomimetics, phase selective gels, oil structuring agents (food/cosmetics), antibacterial coatings, battery components/energy storage, green surfactants

John’s research is rooted in the idea that innovation can be inspired by nature to develop economical and sustainable technologies for a greener future. The group has harnessed crop-based precursors such as sugars, fatty acids and plant lipids to design a unique set of multifunctional soft-materials including polymers, gels and green surfactants. His group has successfully developed environmentally benign antibacterial paints, polymer-coatings, molecular gel technologies, oil spill recovery materials, battery components and oil thickening agents. As soft materials research is highly interdisciplinary and collaborative, John’s lab encourages the blending of such diverse elements including organic synthesis, green chemistry, material chemistry, interfacial phenomena, colloid science and biomimetics.

Publications


Laura Juszczak is a physical chemist with extensive experience in the spectroscopic study of tryptophan in proteins. Her recent discovery of visible absorption and fluorescence in aromatic cation-pi interactions constitutes a paradigm shift for the study of numerous classes of protein-ligand interactions.

Laura Juszczak
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LJUZAK@brooklyn.cuny.edu

2013- current associate professor
2006-2013 assistant professor
1999-2006 research associate, A. Einstein Coll. of Med.
1992-1999 Postdoc, AECOM
1992 PhD, New York University

Research Interests

Keywords:

Tryptophan photophysics, cation-pi interactions, fluorescence and UV resonance Raman spectroscopy, molecular dynamics/quantum mechanics calculations

Publications

For a complete list of publications, see MyBibliography: http://www.ncbi.nlm.nih.gov/sites/myncbi/laura.jeanne.juszczak.1/bibliography/40598288/public/?sort=date&direction=descending
Dr. Akira Kawamura

Natural products chemistry focused on phytobacterial metabolites.

Chemical messages for microbial interactions.

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www.hunter.cuny.edu/chemistry/faculty/Kawamura

2008- current  Associate Professor, Hunter College
2002-2007  Assistant Professor, Hunter College
1999-2002  Postdoc, Scripps Research Institute
1994-1999  PhD, Columbia University

Publications


Research Interests

Keywords: Natural Products, Phytobacteria, Glycolipids, Immunology

We currently focus on immunomodulatory glycolipids of phytobacteria that were detected in several medicinal plants. In addition to medicinal plants, these lipids exist in many other edible plants. At present little is known about their potential health benefits and risks. This is an important problem because human body is continually exposed to various phytobacterial metabolites through consumption of vegetables, fruits, and herbs. To address this problem, we conduct structural and immunological characterization of phytobacterial glycolipids with immunomodulatory activity.
The Keedy Lab is interested in how atomic motions imbue protein molecules with biological functions. We use novel X-ray experiments plus computational modeling to explore dynamic processes like ligand binding and allostery in proteins.

Daniel A. Keedy
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City College of New York, Chemistry & Biochemistry
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2018-current
Assistant Professor, CUNY Advanced Science Research Center, Structural Biology Initiative
2012-2018
Postdoctoral Fellow, University of California, San Francisco (with James Fraser)
2006-2012
PhD, Duke University (with David & Jane Richardson)

Research Interests

Keywords: structural biology, X-ray crystallography, allostery, bioinformatics, protein design

The Keedy Lab develops experimental and computational methods to control proteins by biasing toward specific conformations that underlie functions such as allostery, ligand binding, and catalysis. Our work reveals new opportunities to modulate the activities of therapeutic targets such as tyrosine phosphatases with small molecules and protein engineering, and also offers insights into more general evolutionary processes that led to functional diversity in the human genome.

Publications


Dr. Reza Khayat

Khayat group studies the structure and function of proteins encoded for and utilized by pathogens to infect and replicate. We use a combination of X-ray crystallography, cryo-electron microscopy, biophysics, biochemistry, and cellular biology to complete these studies.

Reza Khayat
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www.khayatlab.org

2012- current  Current position
2008-2012 Sr. Research Associate, TSRI
2003-2008 Research Associate, The Scripps Research Institute
1998-2003 PhD, Columbia University

Research Interests

Keywords: cryo-electron microscopy, X-ray crystallography, biophysics, biochemistry, cellular biology
We seek to understand the structural and chemical mechanism by which pathogens hijack the cellular machinery of their host for infection and replication. We use a combination of techniques to understand this mechanism at the atomic resolution to relate how chemistry drives biology, and a number of techniques to understand how biology feeds back into chemistry for new pathways to be exploited by the pathogen for infection and replication. We are also interested in developing computational methods to further combine X-ray crystallography with cryo-electron microscopy.

Publications


Khayat R, Lander GC, An automated procedure for detecting protein folds from sub-nanometer resolution electron density, *J. Struct. Bio.* Jun; 170(3); 513-21
Dr. Mark N. Kobrak

Mark Kobrak is a physical chemist with expertise in classical and quantum dynamics simulations and physical studies of liquids. Current work centers on ionic liquids and related mixtures, and on studies of solid-liquid interfaces.

Research Interests

Keywords: Ionic Liquids, nanostructured liquids, interfaces, molecular dynamics, thermodynamics

The group’s interest in ionic liquids and liquid mixtures center on using both theoretical and experimental techniques to understand liquid systems. The group has uncovered structure-property relationships relevant to both viscosity and solvent polarity in ionic liquids, aiding in the development of ionic liquids with optimal properties for applications of interest. Recent projects consider the use of ionic liquids for the extraction of metals from the aqueous phase, and study nanoscale structure in liquids.

Additional interests center on using thermodynamics to understand solid-liquid interfaces. The results demonstrate linkages between macroscopically-observable properties such as surface tension and the microscopic structure of the interface.

Publications


Michal Kruk is a professor in chemistry. His research interest is in design of well-defined nanoporous and nanostructured materials using surfactant micelle templating, nanocasting and controlled surface-initiated polymerization.

**Publications**


**Research Interests**

*Keywords: ordered mesoporous materials, hollow nanoparticles, controlled surface-initiated radical polymerization*

- Design of ordered nanoporous materials.
- Application of controlled polymerizations in the synthesis of nanostructured materials, including porous inorganic/polymer nanocomposites.
- Development of methods for accurate characterization of nanoporous materials.
- Synthesis of nanoporous materials with closed pores.
- Synthesis of single-micelle-templated hollow nanoparticles.
The Kurtzman group focuses on the development of methodologies to characterize the structure and thermodynamics of water on the surface of proteins and the exploitation of solvation properties for the discovery and design of new drugs.

**Research Interests**

Keywords: Solvation Thermodynamics, Statistical Mechanics, Computer Aided Drug Design

Research in the Kurtzman lab focuses on the development of computational tools that can aid in the discovery and rational design of new drugs. His approach applies statistical mechanical theory and computer simulations to better understand the physical principles that govern the molecular recognition between proteins and small molecule ligands (drugs). A particular emphasis is placed on the role that water plays in the molecular recognition process. A principal goal of this research is to help design and discover drugs that bind with high affinity and selectivity to given protein targets.
Lakshman is an organic/bioorganic chemist with interests in nucleoside modification via metal catalyzed, uncatalyzed, and hypervalent iodine reactions, new chemical methods, synthesis of biologically interesting entities, novel applications of peptide coupling agents, and arynes.

Dr. Mahesh Lakshman
Professor and Former Executive Officer
2018 Presidential Award for Excellence
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20008–current  Professor
2004–2008  Associate Professor
2000–2004  Assistant Professor
1998–2000  Assistant Professor (U North Dakota)
1994–1997  Senior Scientist (Private Sector)
1990–1994  Fogarty Fellow NIH (NIDDK)
1985–1989  PhD

Research Interests

Keywords: Chemical Methodology, Metal catalysis, Nucleoside Modification, Biomolecules

The program has many facets but can be broadly divided into the following areas.

Every aspect entails a detailed understanding of chemical process via mechanism studies involving various spectroscopic methods, multinuclear NMR, isotopic labeling, etc.

Publications

- S. Satishkumar and M. K. Lakshman: Benzimidazopurine nucleosides from N6-aryl adenosine derivatives by PhI(OAc)2-mediated C–N bond formation, no metal needed, Chemical Communications 2017, 53, 2226. (Featured on the front cover)
- M. K. Singh et al.: Ruthenium-catalyzed C–H bond activation approach to azolyl aminals and hemiaminal ethers, mechanistic evaluations, and isomer interconversion, ACS Catalysis 2016, 6, 1921. (Featured on the front cover)
Dr. Themis Lazaridis

The Lazaridis lab works in the area of theoretical and computational Biophysics. In the past few years we have worked on the interaction of proteins with biological membranes. We are especially interested in the process of pore formation by antimicrobial peptides and other toxins.

Publications


Research Interests

My research is in the area of Theoretical and Computational Biophysical Chemistry, which aims to understand how biological systems work in terms of the fundamental laws of Physics and Chemistry. Biomolecules, such as proteins and nucleic acids, have well defined conformations which often change in the course of their function. Our goal is to understand the forces that operate within and between biomolecules and develop quantitative mathematical models for their energy as a function of conformation. Such models are useful in many ways, such as predicting the three-dimensional structure from sequence, characterizing conformational changes involved in biological function, or predicting the binding affinity between two biomolecules.
Dr. Jianbo Liu
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Queens College and the Graduate Center of CUNY
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http://chem.qc.cuny.edu/~jliu/Liu_page/Liu_main.htm

Publications


Keywords: mass spectrometry, singlet oxygen, reaction dynamics/kinetics, spectroscopy

Our research focuses on using various instrumental analysis approaches (e.g., mass spectrometry, mass spectrometry, computational chemistry, and nanotechnologies) to probe biologically relevant processes in a spectrum of systems ranging from isolated biomolecules, through micelles and aerosols, to biomolecule solution. The experiments are complemented by extensive computational efforts including statistical modeling and molecular dynamics methods.

\begin{itemize}
  \item 2013- current \hspace{1cm} Associate Professor, Queens College
  \item 2016-2013 \hspace{1cm} Assistant Professor, Queens College
  \item 1999-2000 \hspace{1cm} Postdoc, Lawrence Berkeley Lab
  \item 1997 \hspace{1cm} Ph.D. (Physical Chemistry)
\end{itemize}
Gustavo Lopez is a Lehman College computational and theoretical chemist. He specializes in developing and applying computational methods to describe systems in computational phase. Specifically, quantum and classical Monte Carlo techniques are applied to describe nanostructured systems, molecular hydrogen adsorbed on surfaces or trapped in fullerenes, and biomolecular systems.

**Publications (select)**


**Research Interests**

**Keywords:** computational chemistry, path-integral Monte Carlo, molecular hydrogen, fluids, proton wires

Professor Gustavo Lopez is interested in developing computational techniques to describe various systems in computational phase. Specifically, quantum and classical Monte Carlo techniques are applied to describe nanostructured systems, molecular hydrogen adsorbed on surfaces or trapped in fullerenes, and quantum liquids. Additionally, ab-initio techniques are used to describe molecular wires formed in helical peptides, metal oxides, and semiconductors.
Dr. Sharon Loverde is a Professor of Chemistry at College of Staten Island. Her research group is interested in the area of soft and biological materials.
Using natural surfaces as inspiration, the Lyons group fabricates nanoscale materials with unique wetting, catalytic, thermal and/or optical properties. We are especially interested in developing a fundamental understanding of reactions and properties at the solid-liquid-gas interface. We work closely with industry with the goal of transitioning our inventions into industrially relevant innovations; active projects include: anti-reflective self-cleaning optically clear coatings to increase the energy efficiency of photovoltaic panels and the isolation and study of single cells within nano/picoliter gel droplet arrays.

Keywords: superhydrophobicity, wetting, polymer pen printing, photocatalysis, thermal interfaces
Dr. Neepa Maitra

Neepa Maitra is a theoretical chemical physicist with research interests in density functional theory, especially its time-dependent flavor, electronic excitations and dynamics and their coupling to ionic motion beyond the Born-Oppenheimer approximation.

Research Interests

Keywords: Electronic Structure and Dynamics, Time-Dependent Density Functional Theory (TDDFT), Non-Adiabatic Dynamics

TDDFT is a method to describe electronic excitations and dynamics in atomic, molecular, chemical systems and solids. We focus on fundamental development: investigating properties of the exact functionals in order to guide the development of accurate approximations e.g. memory-dependence, in both the linear response regime and for dynamics in intense fields, impacting applications from electronic spectra to attosecond control and charge transfer. We also have several projects involving the exact-factorization approach to coupled electron-ion dynamics. This first-principles approach enables us to define exact potentials that act on the electronic and nuclear subsystems, and is the correct starting point for building approximate mixed quantum-(semi)classical methods.

Publications


Prabodhika Mallikaratchy develops nucleic acid aptamers against cellular targets to probe cell-cell interactions, receptor-ligands interactions. Her research is highly interdisciplinary, which incorporate organic chemistry, combinatorial screening, structural biology, immunology and biochemistry.

Research Interests

Keywords: Nucleic Acid Aptamers (NAAs), Ligand-Guided Selection (LIGS), Nucleic Acid Nanotechnology

Long-term goal of this laboratory is to develop oligonucleotide aptamer based synthetic scaffolds for biological and biomedical applications. Therefore, our research program is aimed at generating new aptamers against biologically important cellular targets, and molecular engineering of multifunctional aptamer structures suitable for drug delivery, imaging and designer immunotherapeutic molecules.
Dr. Louis Massa

Hiroshi Matsui
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http://www.hunter.cuny.edu/chemistry/faculty/Lou/Lou

Postdoc: Brookhaven National Laboratory
PhD: Theoretical Molecular Physics, Georgetown University

Publications


Research Interests

Keywords: differential equations, density matrices, density functional theory, X-ray crystallography, kernel energy method, information theory,

Applications of Quantum Mechanics to the electronic structure of atoms, molecules, and solids.
Dr. Hiroshi Matsui

Matsui is a Professor at Hunter College and Weill Medical College of Cornell University. My research areas are Cancer diagnostics/ therapeutics, Bionanotechnology, Lab-On-a-Chip, and Nanoparticle Synthesis for Medical Applications.

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Hunter College /&
Weill Medical College of Cornell University
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hmatsui@hunter.cuny.edu
www.hunter.cuny.edu/chemistry/faculty/Hiroshi/Hiroshil

Research Interests

Keywords: Cancer Nanotechnology, Cancer Diagnostics/therapeutics, Lab-On-a-Chip, Medical Nanoparticles

Current interests of Matsui’s group are in the areas of 1) Nanoparticle-based drug delivery and medical imaging 2) Exosome engineering 3) T-cell-exosome-based immunotherapy 4) RNA delivery for gene therapy/editing 5) ultra-sound-based nanoparticle medical treatment

Publications


Dr. Donna McGregor is an Analytically trained Inorganic Chemist. Her primary research interests are in the fields of Chemical Education Pedagogy and the use of basic d and l Amino Acids as di and tripeptide building blocks for the intelligent, systematic design of more complex metal-chelating systems and potentially interesting nanostructures.

**Research Interests**

**Keywords:** analytical, drug-design, inorganic, metal oxides, redox chemistry, radiochemistry, tri-peptides

Dr. McGregor is interested in 2 very different facets of Chemistry research.

*Chemical Education Pedagogy:* Specifically, the development and study of how students learn chemistry in a flipped classroom using video lectures and active learning classroom activities.

*Using basic amino acids as building blocks for complex structures:* Specifically the intelligent design of short peptide sequences that act as metal-chelating cores to model the binding of d-block metals in radiotherapeutic drug design and/or radioactive waste remediation. These systems also have the potential to serve as interesting nanostructures due to their diverse chemical and physical properties.
Prof. Messinger studies energy materials with a focus on understanding and controlling properties up from the molecular level. His research lies at the interface of chemical engineering, materials science, physical chemistry, & electrochemistry. Batteries & multi-phase fluids are of current interest.

**Publications**


**Research Interests**

**Keywords:** Physical Chemistry, Materials Chemistry, Electrochemistry, Energy Materials, Rechargeable Batteries, Solid-State NMR Spectroscopy, Transport Phenomena, Multi-Phase Fluids.

We study, design, and synthesize novel materials for energy applications, with a strategic emphasis on measuring, understanding, and controlling the molecular-scale phenomena that govern their macroscopic functions. We use advanced spectroscopic, diffraction, and electrochemical techniques, including novel methods of nuclear magnetic resonance (NMR) spectroscopy. Advanced battery materials composed of low-cost, earth-abundant elements are of current interest, as well as multi-phase, complex fluids for energy applications.
Aneta Mieszawska is an Assistant Professor in the Department of Chemistry at Brooklyn College. Her research is focused on nanomedicine and application of nanoparticle based systems for cancer detection and treatment.


Research Interests

Keywords: second generation nanoparticles, theranostics, biodegradable polymers, nanocrystals

The Mieszawska group research focuses on nanotechnology and nanomedicine with specific interest in designing and testing the nanoparticle systems for concurrent imaging and therapy of disease. These theranostic nanoparticles are based on slow releasing biodegradable and biocompatible polymers, such as PLGA or PLA, that encapsulate contrast agents and small drug molecules. The primary goal is to target and deliver efficacious therapy directly to cancer cells. This interdisciplinary research involves active collaboration with clinicians from Icahn School of Medicine at Mount Sinai.
Michael V. Mirkin is a professor of chemistry at CUNY-Queens College. His research interests are in the field of electrochemistry and include nano- and bio-electrochemistry, interfacial charge-transfer reactions, electrocatalysis, and scanning electrochemical microscopy (SECM).

Dr. Michael V. Mirkin
Professor of Chemistry
CUNY-Queens College
65-30 Kissena Blvd
Flushing, NY 11367
mmirkin@qc.cuny.edu
http://chem.qc.cuny.edu/~mirkinlab/mvm.html

1993 - current
Professor of Chemistry
1990-1993
Postdoc, University of Texas at Austin
1982-1987
PhD in Electrochemistry, Kazakh State University, USSR.

Research Interests

Keywords: Electrochemistry/Physical/Analytical/Nano

We employ nanometer-sized electrochemical probes for molecular level characterization of chemical processes and materials. A wide variety of phenomena are studied including charge-transfer reactions at the solid/liquid and liquid/liquid interfaces, electrocatalysis, bio-electrochemistry, and electrochemical imaging. The main focus is on obtaining quantitative physico-chemical information by combination of experiments with mathematical modeling and computer simulations. We also maintain active interest in development of electrochemical techniques for analytical applications. These include carbon nanoprobes, amperometric nanosensors, and resistive-pulse sensors.

Publications


P. Sun and M.V. Mirkin, Electrochemistry of individual molecules in zeptoliter volumes, JACS, 2008, 130, 8241-8250.

Our research centers on the design, synthesis and application of biomechanistic probes, and the development of new synthetic methodologies.

David Mootoo
Professor
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Chemistry Department
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http://www.hunter.cuny.edu/chemistry/faculty/Randy

1989- current  Professor
1986-1989  Postdoc, Duke University
1982-1986  Ph.D., University of Maryland

Research Interests

Keywords: synthesis, glycomimetics, tumor targeting, immunostimulants

An broad area of current interest is the design and synthesis of molecules for interrogating anti-cancer pathways. Two strategies that center on targeting cytotoxic agents to tumors and glycolipids that boost the immune system against cancer are being pursued. These projects entail the design and synthesis of novel small molecules and examination of their biological properties, in the context of specific disease mechanisms.

Publications


Dr. Ryan Murelli and his group develop and use tools of synthetic organic chemistry to meet challenges in modern medicine. They are particularly interested in tropolones, which are underexplored aromatic compounds with a wealth of potential in biology and medicine.

**Research Interests**

*Keywords:*

Synthetic Organic Chemistry, Medicinal Chemistry, Chemical Biology.

**Publications**


Dr. Daniele Musumeci is a pharmaceutical scientist with expertise in materials science, solid-state chemistry, physical pharmacy, and crystallization processes of pharmaceutical compounds. His research focus on the mechanistic understanding of crystallization processes and the development of strategies to improve the oral solubility of drugs.

**Publications**


**Research Interests**

**Keywords:** pharmaceutical materials, crystallization, glasses, solubility.

The research in the laboratory of Daniele Musumeci centers around the investigation of crystallization processes of pharmaceutical compounds from solution and from the amorphous state. Dr. Musumeci interests include organic solid-state chemistry, crystal engineering, characterization of amorphous and crystalline materials, high-resolution microscopy, and the development of strategies to improve solubility of poorly water soluble oral drugs.
Naphtali has a varied research background that reflects his wide research interests. His research ranges from developing biomaterials to designing molecular probes.

**Research Interests**

- Keywords: biomaterials, hydrogels, polymers

My current research focus is the development of materials for biomedical applications. We recently developed a method for preparing polysaccharide-polyamine crosslinked hydrogels. We are currently exploring their application as anti-microbial and wound healing materials. We are also working on the development of curcumin based biomaterials as antibacterial agents and cancer therapeutics.

**Publications**


**Selected Publications**


Ivone Gomes et al. "GPR171 is a Hypothalamic G Protein-Coupled Receptor for BigLEN, a Neuropeptide involved in Feeding” Proceedings of the National Academy of Sciences (PNAS) USA, 2013, 110(40), 16211–16216.


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**Dr. Sanjai Kumar Pathak**

Associate Professor
Queens College, and the Ph.D. Program in Chemistry and Biochemistry, The Graduate Center of the City University of New York
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Email. Sanjai.Kumar@qc.cuny.edu
http://chem.qc.cuny.edu/~skumar/

**2014- current**
Associate Professor

**2007-2014**
Assistant Professor

**2002-2007**
Postdoc, Albert Einstein College of Medicine

**1996-2002**
PhD, Wesleyan University

**Research Interests: Chemical Biology of Protein Phosphorylation and Proteolysis**

**Keywords:** Cysteine Cathepsins, Protein Kinases, and Tyrosine Phosphatases

**Description of research activities and strategy.** The research in Kumar’s laboratory spans at the interface of chemistry and biology, and is broadly focused on discovery of unknown enzyme function using chemical biology approaches. The current project includes the development of small molecule probes for protein kinases, protein tyrosine phosphatases, and cysteine proteases and utilizing them to understand the enzyme function in both normal and diseased human physiology. For more information, please visit the website.
Dr. Ralf M. Peetz

Ralf Peetz is interested in functional materials that could be of use in meeting future energy needs.

Ralf M. Peetz, PhD
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http://www.csi.cuny.edu/departments/chemistry

2003- current  CSI and Graduate Center
2000-2003  Postdoc, University of Akron, Institute of Polymer Science
1997-2000  PhD, University of Hamburg, Germany

Publications

Sengupta, Arijit; Doshi, Ami; Jaekle, Frieder; Peetz, Ralf M., Journal of Polymer Science Part A (2015), accepted

Zhilin, Denis M.; Peetz, Ralf M., Journal of Chemical Education (2014), 91(1), 119-122

Sengupta, Arijit; Ghosh, Sutapa; Peetz, Ralf M., Synthetic Metals (2010), 160(17-18), 2037-2040

Burrows, Hugh D.; Narwark, Oliver; Peetz, Ralf; Thorn-Csanyi, Emma; Monkman, Andrew P.; Hamblett, Ian; Navaratnam, Suppiah, Photochemical & Photobiological Sciences (2010), 9(7), 942-948.

Mukherjee, Narayan; Peetz, Ralf M., Macromolecules (2008), 41(18), 6677-6685

Research Interests

Keywords: Functional Materials, Conjugated Polymers, Donor Acceptor Systems

We are currently interested in the controlled synthesis of donor-acceptor macromolecules for potential use in organic polymer photovoltaics. Some candidates featuring promising electronic properties and absorbing over a broad range of wavelengths are currently scheduled to be tested in prototype photovoltaic cells.
Dr. Sébastien Poget is interested in membrane protein structure and function, with a particular emphasis on the interactions between ion channel domains and animal peptide toxins.

**Research Interests**

Keywords: Solution-state NMR, membrane protein structural biology, ion channels, toxins, electrophysiology, biophysics

The Poget lab is interested in the structural and functional study of membrane proteins through solution-state NMR and other biophysical methods. Our studies focus on better understanding the interactions of animal peptide toxins with their target ion channel domains as tools for an improved understanding of ion channel function and starting point for drug development. To carry out these studies at the cutting edge of structural biology, we are also involved in the development of new and improved methods for membrane protein studies, including development of more powerful membrane mimetics such as bicelles and optimized NMR methods.

**Publications**


Protein-ligand interactions is the unifying theme of my research interests. In particular, the design, synthesis and application of biologically relevant probe molecules to study and elucidate protein-protein and protein-ligand interactions involved in amyloid diseases and cancer.

Research Interests

Keywords: Amyloid, protein kinases, peptides, peptoids, enzymology, solid phase synthesis

The abnormal formation of protein aggregates, or amyloid deposits, is the hallmark of Alzheimer’s disease as well as type 2 diabetes. My laboratory is investigating the molecular interactions that occur between key proteins that contribute to the formation of amyloid in these diseases. Through a more detailed understanding of how these proteins self-assembly to form aggregates, we hope to design and develop small molecule and peptide mimetic inhibitors which may serve as potential therapeutic agents.

We are also developing compounds that inhibit the activity of key enzymes (kinases) which can cause tissues to grow out of control and develop into tumors. To accomplish this we are synthesizing molecules that exploit the unique molecular recognition motifs found in these enzymes to more effectively deliver inhibitory species to the active site.

Publications


Krishnaswami Raja is College of Staten Island Chemistry faculty working in the area of Bionanotechnology, Origin of life research and green drug discovery and development.

**Publications**


Raja, K.S.; Banerjee, P.; Lamoreaux, W.; Shi, W.; Auerbach, A.;“Novel Curcumin and Tetrahydrocurcumin derivatives” US patent number 8487139


**Research Interests**

Keywords: Origin of life, stigmergy scaffolds, 3D Cell culture, Ayurbiotecnology, Virus Chemistry, Bioconjugation, Green drug development, Polymer-protein hybrids

The Raja group is interested in creating programmable scaffolds for probing the origins of multi-cellular life, synthesis of well defined polymer-bionanoparticle/targeting protein hybrids and green drug discovery and development based on Ayurveda. The research spans the areas of small molecule and polymer synthesis, bioconjugation chemistry and bioengineering.
Dr. Varattur Reddy

Our group research focuses on the following areas: Synthesis of organic and organometallic compounds as anticancer and anti-Alzheimer’s disease agents, and catalysis.

Name: Varattur D. Reddy
Position: Professor
Affiliation: Kingsborough Community College
Address: 2001 Oriental Blvd
          Manhattan Beach, Brooklyn, NY 11235
          vreddy@kbcc.cuny.edu and vreddy@gc.cuny.edu

2001- current  Kingsborough Community College-CUNY
1993-2001  Schering Plough Pharmaceutical Company
          currently Merck and American Health Foundation
1990-1993  Hunter College and Queens College
1990  Ph.D.  Indian Institute of Technology, Mumbai

Publications


Research Interests

Synthesis of organic and organometallic compounds as anticancer and anti-Alzheimer’s disease agents. Organic synthesis involves total synthesis of natural and unnatural products and modified carbohydrates. Organometallic chemistry involves synthesis of novel organometallic catalysts, efficient methodologies for the synthesis of biologically active molecules, bioorganometallics, and drug delivery systems. Research facilities at Kingsborough are 400 MHz NMR Facility, IR, GC, and HPLC.
Dr. Susan A. Rotenberg

Susan A. Rotenberg
Position: Professor
Affiliation: Queens College
Department of Chemistry & Biochemistry
65-30 Kissena Boulevard
Flushing, NY 11367
Susan.Rotenberg@qc.cuny.edu
http://rotenberglab.com/
(website under construction)

1990 - current  Professor
1985 - 1990  Postdoctoral - Rockefeller University, Columbia University
1980 - 1985  Ph.D. – Brown University

Publications


Research Interests

Keywords:
Enzyme inhibitors; protein structure and function relationships; cell signaling pathways
Dr. Ryan’s lab applies chemical concepts to biological problems in two main areas, RNA and olfactory molecular recognition.

Kevin Ryan, Ph.D.
Associate Professor, Biochemistry Division
Department of Chemistry and Biochemistry
The City College of New York
MR-1337, 160 Convent Ave.
New York NY
kr107@sci.ccny.cuny.edu
http://www.sci.ccny.cuny.edu/~kr107/index2/index.html

2009- current  Associate Professor
2003-2008  Assistant Professor
1996-2003  Postdoc, Columbia University (Chemistry and Biology Depts.)
1996  Ph.D., University of Rochester

Publications

Liu, M. T.; Nagre, N. N.; Ryan, K., Structurally diverse low molecular weight activators of the mammalian pre-mRNA 3’ cleavage reaction. *Bioorganic & Medicinal Chemistry* 2014, 22 (2), 834-41;

Li, Y.; Peterlin, Z.; et al., Aldehyde Recognition and Discrimination by Mammalian Odorant Receptors via Functional Group-Specific Hydration Chemistry. *ACS Chemical Biology* 2014;

Lama, L.; Seidl, C. I.; Ryan, K., New insights into the promoterless transcription of DNA coligo templates by RNA polymerase III. *Transcription* 2014, 5 (1);


Research Interests

Keywords: molecular recognition, olfaction, RNA, micro RNA, RNA interference, RNA polymerase III, chemical biology, transcription

In the RNA area, we study the use of chemically synthesized transcription templates as potential information-bearing molecules for producing small therapeutic RNA in human cells. A second RNA area is the biochemistry of RNA processing reactions that occur during the biogenesis of messenger RNA in human cells. In the olfaction area, we use pharmacology, organic synthesis and chemical biology to probe the biochemistry of the sense of smell.
Dr Matthew Sfeir

Dr. Sfeir’s research uses broadband ultrafast and optoelectronic techniques to identify novel electronic properties in molecular and nano-materials. His group investigates their use in novel devices architectures, including for light harvesting and photonics applications.

Matthew Y. Sfeir
Associate Professor
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Advanced Science Research Center
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New York NY, 10031
msfeir@gc.cuny.edu
http://sfeirlab.ws.gc.cuny.edu/

2019-current
Associate Professor, CUNY ASRC & The Graduate Center

2009-2019
Scientist, Center for Functional Nanomaterials Brookhaven National Laboratory

2005-2009
Postdoc, Condensed Matter Physics and Materials Science, Brookhaven National Lab

2000-2005
PhD, Chemical Physics, Columbia University

Research Interests

Keywords: Ultrafast optics, nanophotonics, charge and spin dynamics, energy, optoelectronics


Nanostructured Energy Conversion Devices: Fabricating energy conversion devices, including solar cells, disordered lasers, and photoelectrochemical cells from nanomaterials and assemblies.

Next Generation Ultrafast Spectroscopy Methods: Developing high speed, imaging, and in situ capabilities for ultrafast spectroscopy using next generation sources and detectors.

Publications


Research Interests

Keywords: Statistical Mechanics, Thermodynamics, Liquid State Theory and Computer Simulation

Our group develops model, theory and simulation to elucidate the structure of colloids, polymeric materials, confined and crowded cells, and self-assembled nanoparticles.
Dr. Shusterman is a radiochemist with interests in separations development for the nuclear fuel cycle and forensics, and isotope production.

**Publications**


**Research Interests**

**Keywords:** Radiochemistry, Actinides, Nuclear Chemistry, Nuclear Fuel Cycle, Nuclear Forensics, Isotope Production

The research in the Shusterman lab is focused on the investigation of isotope production pathways, materials for heavy metal separations, and radiochemical measurements of nuclear reaction properties for application to the nuclear fuel cycle, medicine, forensics, and fundamental nuclear science.
Dr. Yolanda Small

Dr. Small’s research is at the interface of biology, chemistry and condensed matter physics where she applies computational techniques to address questions ranging from reactions in enzymes to reactions at the aqueous/semiconductor interface.

Yolanda A. Small
Assistant Professor
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Jamaica, NY 11451-0001
ysmall@york.cuny.edu
www.york.cuny.edu/portal_college/small-yolanda-1

2010- current    Assistant Professor – York College CUNY
2007-2010       Postdoc – Brookhaven National Lab

Publications


Research Interests

Keywords:

Two main computational methods are applied to answer questions about the molecular interactions of catalysts and semiconductors: (1) Quantum Mechanical/Molecular Mechanical (QM/MM) modeling and simulations and (2) electronic structure methods using Gaussian-based Density Functional Theory (DFT).
Ruth E. Stark
Distinguished Professor
City College Dept. of Chemistry and Biochemistry
CUNY Institute for Macromolecular Assemblies
CCNY CDI 1302, 85 St. Nicholas Terrace
New York, NY 10031
Email rstark@ccny.cuny.edu
http://www.sci.ccny.cuny.edu/resgroup

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<tr>
<th>Year</th>
<th>Position</th>
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<tr>
<td>2007 - current</td>
<td>CUNY Dist. Prof., CCNY</td>
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<tr>
<td>1985 - 2007</td>
<td>Assoc.-Dist. Prof., Coll. of Staten Island</td>
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<td>1979 - 1985</td>
<td>Asst. Prof., Amherst College</td>
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<tr>
<td>1977 - 1979</td>
<td>Postdoctoral Fellow, M.I.T.</td>
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<tr>
<td>1977</td>
<td>PhD, Physical Chemistry, UC San Diego</td>
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### Publications


### Research Interests

**Keywords:** molecular biophysics, biopolymers, bioanalytical chemistry, solid- and solution-state NMR

The Stark Laboratory uses structural biology and biophysical approaches to study plant protective polymers, lipid metabolism, and potentially pathogenic melanized fungal cells. Study of the molecular and mesoscopic architectures underlying the integrity of cuticles in natural and engineered potatoes and tomatoes is undertaken using solid- and solution-state nuclear magnetic resonance (NMR), mass spectrometry, and atomic force microscopy. Ligand recognition and peroxisome proliferator-activated receptor interactions of fatty acid-binding proteins are under investigation by solution-state NMR and fluorescence spectroscopy. The molecular structure and development of melanin pigments within fungal cells are probed using (bio)chemical synthesis and solid-state NMR.
Maria C. Tamargo is Professor of Chemistry at the City College of New York. Her research is in semiconductor materials and nanostructures design, growth by epitaxial growth techniques, characterization methods, and applications.

Research Interests

Keywords: Molecular Beam Epitaxy, compound semiconductors, II-VI semiconductors, photonic devices, nanomaterials, topological insulators.

Materials growth, properties and applications of semiconductor multi-layered structures grown by molecular beam epitaxy (MBE). Areas of research activity include III-V compounds, strained-layer and short-period superlattices, surface and interface chemistry, visible light emitters, optoelectronic devices, wide bandgap II-VI compounds, II-VI/III-V heteroepitaxy, low dimensional nanostructures, selective area epitaxy, intersubband devices, quantum cascade lasers, VECSELs, topological insulators.

Publications


T. A. Garcia, V. Deligiannakis, C. Forrester, I. Levy and M. C. Tamargo, Bi$_2$Se$_3$ van der Waals Virtual Substrates for II–VI Heterostructures, phys. status solidi b 254, 1700275 (2017).
Dr. Ming Tang is an assistant professor in the chemistry and biochemistry programs at CUNY. His long-term research endeavor is to investigate the function-modulating interactions between proteins and membrane components by solving structures of membrane-associated protein complexes and aggregates by NMR spectroscopy.

Publications


Research Interests

Keywords: Membrane proteins, ion channels, amyloidogenic proteins, Phosphoinositide, solid-state NMR, protein aggregates, paramagnetic relaxation enhancement.

The elucidation of structure-function relationships of membrane proteins will contribute tremendously to our understanding of how proteins interact with lipids and/or cofactors to operate. In turn, these fundamental discoveries will translate into novel biomaterials and rationally designed therapeutic agents, since roughly 60% of all current drug targets are membrane proteins, yet structures of membrane proteins remain scant relative to their soluble counterparts. We have successfully developed solid-state NMR methods to tackle the challenges of membrane proteins and protein aggregates. Hence, we will be able to obtain detailed atomistic models from the structural information to describe the fundamental principles of how the membrane influence protein functions and vice versa.
Micha Tomkiewicz is a professor of physics and chemistry at Brooklyn College and the school for Graduate Studies of the City University of New York. He served as founding-director of the Environmental Studies Program and the Electrochemistry Institute at Brooklyn College; was divisional editor, Journal of the Electrochemical Society (1981-91); chairman, Energy and Technology Division, the Electrochemical Society (1991-93); and member, International Organizing Committee of the conferences on Photochemical Conversion and Storage of Solar Energy (1989-92).

**Publications**

### Weekly blog on climate change at:
http://climatechangefork.blog.brooklyn.edu/


**Research Interests**

*Keywords: Climate Change, Physics of Sustainability, Energy.*

Environmental issues, science and society, photoelectrochemistry, electrochemistry, physics and chemistry of solid-liquid interfaces, morphology and transport properties of composite media, solar energy conversion and storage, photovoltaic devices, batteries.

**Strategy:** Students will learn how to do energy audits and carbon footprints on a variety of scales. Students will do longitudinal studies on the various components of the global efforts to change energy sources from reliance on fossil fuels to alternative energy sources.
Dr. Torrente is interested in the molecular mechanisms underlying neurodegenerative and psychiatric disease.

**Research Interests**

**Keywords:**

We seek to understand the role of epigenetic mechanisms and protein folding in the etiology of neurodegenerative and neuropsychiatric disease. The central hypothesis of our research is that posttranslational modification (PTM) of histones and protein misfolding play a key role in linking genetic predisposition to cellular toxicity in neurodegenerative disease. Epigenetics and protein aggregation may reveal alternative mechanisms behind the occurrence of disease, serving as the missing link between genetic and environmental factors.

**Publications**


**2015- current**  Assistant Professor, Brooklyn College; NIH Career Transition Award Fellow

**2012-2015**  IRACDA PENN-PORT Postdoctoral Fellow, University of Pennsylvania

**2010-2012**  NIH NRSA Postdoctoral Fellow, Penn State University College of Medicine

**2010**  Ph.D. in Chemistry, Princeton University
Dr. Rein Ulijn

Rein Ulijn is founding director of the nanoscience initiative at the Advanced Science Research Centre at CUNY and Professor of Nanochemistry at Hunter College. His research is focused on minimalistic molecular materials and adaptive systems that are inspired by biology.

Publications


Research Interests

Keywords: molecular systems, bionanotechnology, hydrogels, peptides, biocatalysis, adaptive materials

The Ulijn group are interested in the development of materials and systems that mimic biology’s adaptive properties but are much simpler. These materials (including gels, emulsions, structured surfaces and nanotubes) have potential applications in health care, cosmetics, lifestyle products, food science. These applications are sought in active collaboration with researchers and companies across the globe. The approach is cross-disciplinary and covers the entire range from fundamental understanding to eventual applications and societal benefit.
Dr. Michele Vittadello

Dr. Vittadello’s research is focused on the areas of nanotechnology and materials science, inorganic and physical chemistry


Research Interests

Keywords: Energy Nanotechnology and Materials, Biohybrid Photosynthetic/Mitochondrial Systems, Polymer Electrolytes, Lithium/Magnesium Batteries, Supercapacitors, Fuel Cells, Photovoltaic Devices, Bionanotechnology, Environmental Elemental Analysis, Radioremediation.

Investigation of fundamental physical-chemical properties of nanomaterials, materials and biomaterials with potential applications in the field of energy storage/generation and biotechnology; Design and assembly of new devices; High quality publications and patents.
Dr. Chen Wang

As experimental physical chemists, we assemble semiconductor nanocrystals and molecules to create novel materials, and investigate photophysical/photochemical properties of these materials using time-resolved optical laser spectroscopy.

Publications


Research Interests

Keywords: ultrafast optical spectroscopy, exciton dynamics, nanomaterials, quantum dot

The aim of our research is to achieve systematic control of the behavior of excitons within the superstructures of quantum dots and organic molecules that are developed in our lab. We employ time-resolved optical spectroscopy to investigate the evolution of excitonic states in these novel nanostructures. The knowledge we learn can direct rational designs of materials for applications including optoelectronic devices, photocatalysis, and biomedical sensors.
Dr. Nan–Loh Yang

Nan-Loh Yang is a Professor of Chemistry at College of Staten Island. His research areas include antimicrobial polymer nanoparticle; polymers with well-defined structure; and materials for nanoelectronics - giant dielectric constant element, fast conductance switch, 4-stage memory and room temperature magnetoelectric coupling.

Publications


Research Interests

Keywords: Nanoelectronics, Superbugs killers, Photopolymers Novel Polyacetalts, Supercapacitor Fast Switch, Amphiphilic Polyelectrolytes, Micelles

Professor Yang’s research group is involved in developing amphiphilic non-hemolytic and antibacterial nanoparticle based structural tuning with optimizing hydrophobic – hydrophilic molecular topography. The nanoelectronics research exploits the characteristic of micell reactors and interfacial polymerization.
Dr. Barbara Zajc

Zajc is an organic/bioorganic chemist working in areas of (a) fluoroorganic chemistry, (b) chemical carcinogenesis, and (c) synthetic methodology.

Barbara Zajc
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http://www.ccny.cuny.edu/profiles/Barbara-Zajc.cfm

2013 Professor
2003 Associate Professor (CCNY)
2001 Assistant Professor (Substitute, CCNY)
1999 Associate Professor (U of Ljubljana)
1993 Assistant Professor (Docent, U of Ljubljana)
1991 Fogarty Fellow NIH (NIDDK)
1989 PhD

Research Interests

Keywords: Fluoroorganic chemistry, Biomolecules, Chemical Carcinogenesis

Fluoroorganics are highly important in diverse areas, but introduction of fluorine remains challenging. Our research is focused in two main directions. One involves development of methods for regiospecific introduction of fluorine atom into organic molecules. Here, we are developing and expanding a toolbox of novel reagents for the synthesis of variously functionalized vinyl fluorides, as also various novel fluorinated synthetic building blocks. Another area of research involves the use of fluorine as probe in structure activity studies in the area of chemical carcinogenesis. Specifically fluorinated polycyclic aromatic hydrocarbons, their metabolites and their DNA conjugates are synthesized as probes to understanding cellular events after metabolism and DNA binding. We are currently investigating the use of the new hydrocarbons for development of novel materials.

Publications


Prof. Zhang is an inorganic chemist who has broad research interests in inorganic/organometallic chemistry, non-precious metal catalysis and forensic chemistry, with a focus on the synthesis of novel organic-inorganic functional materials.

Guoqi Zhang
Assistant Professor
Department of Sciences
John Jay College of Criminal Justice
524 W 59th Street, 10019
New York NY
Email: guzhang@jjay.cuny.edu
http://www.jjay.cuny.edu/faculty/guoqi-zhang

2013- current Assistant Professor
2001-2006 Ph.D., Institute of Chemistry, CAS

Publications


Research Interests

Keywords: Inorganic/Organometallic Catalysis, Energy Conversion; Forensic Chemistry

Description of research activities and strategy:
Our research concerns over the design and synthesis of novel non-precious metal complexes and their applications in energy-related catalysis, supramolecular chemistry, anticancer drugs and forensic science.
Our group focuses on the synthesis of bioactive heterocycles and their SAR studies.

Publications


Research Interests

Keywords: Organic Synthesis, Anticancer, Antiviral, Heterocycles, Natural Products

1. New methodologies in heterocycle synthesis

2. Total synthesis of bioactive natural products
Shuiqin Zhou is a Professor of Chemistry at CUNY College of Staten Island. Her research is focused on responsive polymer-nanoparticle (including carbon dots) hybrid nanogels, inorganic-carbon composite nanoparticles, and complex assembly of nanoparticles for sensing, imaging, drug delivery, and environmental remediation.

Research Interests

Keywords: responsive polymers, hybrid nanogels, nanoparticles, carbon dots, assembly, biosensing, drug delivery, cell imaging, environmental remediation

The Zhou group is interested in the development of (1) glucose-responsive hybrid nanoparticles (NPs) for glucose sensing and self-regulated insulin delivery; (2) multifunctional nanomaterials from the combination of optically active NPs with responsive polymers for sensing, imaging, and therapy; and (3) composite nanomaterials from the complex assembly of carbon-based NPs, inorganic NPs, and other amphiphilic components in the confinement of (bio)polymers and colloids for sensing, catalysis, and environmental remediation.

Publications


