Graduate Study in Chemistry
at
Brooklyn College,
The City University of New York

Chemistry and Biochemistry Graduate Study
Chemistry Department, Brooklyn College,
The City University of New York
Ingersoll Hall and Ingersoll Extension house the science departments within the college.

One of the more popular areas on the campus, the koi pond, in front of the entrance to Ingersoll Extension.
Thank you for your interest in the Ph.D. Chemistry or Biochemistry program of the City University of New York. Although most classes are taken at the Graduate Center, 545 Fifth Avenue, Manhattan, the research laboratories are located at various senior college campuses. I am writing to introduce you to opportunities available for study in the Department of Chemistry of Brooklyn College, CUNY.

Currently, the Department of Chemistry at Brooklyn College consists of 13 faculty members actively engaged in research in newly renovated laboratories spanning the fields of analytical, inorganic, organic, physical, theoretical chemistry and biochemistry. We have state of the art equipment including multiple NMR spectrometers, EPR, CD, CW and pulsed laser spectrometers, new HPLC and GC/MS instruments, stopped-flow optical and chemical freez-equench instruments for kinetics, an Isothermal Titration Calorimeter, capabilities for bacterial cell culture and molecular biology work, PC clusters for computational chemistry, and access to other high power computing facilities. The campus has a very well stocked, newly constructed library providing access to all major scientific journals both in hard copy and electronically.

I am including for your consideration some information about the research groups within the department. If you find one or more groups of particular interest please do not hesitate to directly contact the professor for further information. Our e-mail addresses are given at the back of this brochure.

Alternatively, you may write to me indicating the faculty members whose work interests you and I will insure that you receive more information. I sincerely hope that our graduate program interests you.

You might be interested to know that Brooklyn College is located on the southwestern end of Long Island in a residential neighborhood. The attractions of Manhattan are only a short ride away on public transportation. Reasonably priced housing may be found nearby. All of our Ph.D. graduate students are supported with tuition reimbursement and a competitive stipend.

Please visit our website (http://academic.brooklyn.cuny.edu/chem/index.htm) and contact me with any questions you may have.

We hope to hear from you soon.

Best wishes,

James Howell
Chair of the Department
Research Opportunities

Stacey Brenner, Organic

Ph.D., Stanford University, 2005

Research Interests: Research in this group focuses on organic synthesis. We are interested in developing new reaction catalysts that are not metal-based, new organic reactions using non metal-based catalysts, and in the synthesis of small natural products that have medicinal properties.

Grant Support: NIH SCORE, $225,000

Representative Publications


Research Opportunities

Malgorzata Ciszkowska, Analytical, Electrochemistry

Ph.D., University of Warsaw, 1992

Research Interests: utilization of electroanalytical and electrochemical methods for characterization and applications of polymeric gels, biopolymeric materials, and polymeric electrolytes for new power sources, sensors, and environmentally important methodologies. Research projects include voltammetry and anodic stripping voltammetry at mercury film microelectrodes, analytical applications of microelectrodes in the absence of supporting electrolyte, application of microelectrodes at very large concentration of depolarizers, stripping analysis of organic and inorganic compounds, trace analysis, pulse voltammetric techniques in electroanalysis, voltammetric and NMR studies of counterion transport in polyelectrolyte solutions, transport properties of simple ions in solutions without supporting electrolyte, conformational transitions of ionic polymers studied by electroanalytical techniques, electrochemistry in polymeric gels, transport of ions in polymeric gels, and biopolymeric gels as sorbents for heavy metals ions.

Representative Publications


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[Graphical representation of data]
Research Opportunities

Maria Contel, Inorganic, Organometallic

Ph.D., Public University of Navarra, Spain, 1996

Research Interests: Homogeneous catalysis, Bioinorganic, Green Chemistry. Design of new recoverable and recyclable transition metal catalysts for reactions with potential industrial applications

Use of organogold compounds as novel catalysts for several reactions and as anticancer agents.

Representative Publications


Research Opportunities

Lesley Davenport, Biochemistry, Biophysics

Ph.D., University of Salford (UK), 1981

Research Interests Our laboratory is interested in the conformation, dynamics and interactions of important biomolecules and assemblies using state-of-the-art fluorescence methods. Currently we are studying the dynamics of telomeric DNA found at the end of chromosomes and which is a target for the interaction of potential chemotherapeutics.

Grant Support: NIH SCORE, $636,000

Representative Publications


Research Opportunities

Terry Dowd, Analytical, Biochemistry

Ph.D., Syracuse University, 1986

Research Interests: My research investigates the molecular mechanism of Pb\textsuperscript{2+} toxicity through structural and functional studies of the bone protein osteocalcin. High resolution structures of Pb\textsuperscript{2+}-osteocalcin are compared to those of Ca\textsuperscript{2+} and Mg\textsuperscript{2+}- osteocalcin using NMR spectroscopy. Mice are exposed to lead to determine whether lead alters the mineral binding properties of osteocalcin \textit{in-vivo} and mineral properties are investigated using Fourier Transform Infrared Microscopy and MicroCT. Biomechanical properties are measured to observe functional abnormalities.

A second project investigates structural and functional properties of N-terminal peptides from the gap junction protein Connexin. High resolution NMR structures are determined for N-terminal peptides and mutants of Connexin and compared to functional data to determine the mechanism of gating in gap junction channels.

Grant Support: NIH: $953,847; subcontract: $191,634

Representative Publications


Li, L., Gundberg, C. M., and Dowd, T.L. “The three dimensional \textsuperscript{1}H NMR structure of bovine lead ion-bound osteocalcin and implications for Pb\textsuperscript{2+} toxicity.”, 2007 (submitted).
Research Opportunities

Brian Gibney,  Bioinorganic Chemistry

Ph.D. University of Michigan, 1994

Research Interests: Our laboratory is interested in understanding how proteins fold, incorporate metal ions and perform catalysis. Our research approach uses detailed thermodynamic analysis of metal-peptide and metal-protein interactions to understand fundamental metalloprotein structure-function relationships. Currently, we are studying the role of Zn(II) in protein folding and the role of porphyrin structure on heme biochemistry.

Grant Support: American Heart Association, $198,000

Representative Publications


Research Opportunities

Alexander Greer, Organic

Ph.D., University of Wyoming, 1996

Research Interests: Antitumor / antifungal compounds; organic chemistry and synthesis; molecular mechanism of toxicity; chemistry of natural products; photo-chemistry; natural dyes; chemical evolution. We are involved in research of singlet molecular oxygen and other reactive and cytotoxic agents. Other molecules used in our studies (polysulfanes) have unique properties that must have taken eons to evolve to serve as defense chemicals in a marine invertebrate. Uncovering cell responses or the modulation of specific cell sensitivity is also of interest.

Grant Support: NIH SCORE, $480,000

Representative Publications


N. Sawwan; E. M. Brzostowska; A. Greer “Substituent Effects on the Reactivity of Benzo-1,2-Dithiolan-3-one 1-Oxides and Its Possible Application to the Synthesis of DNA-Targeting Drugs” J. Org. Chem. 2005, 70, 6968-6971

Research Opportunities

Andrzej Jarzecki, Theoretical

Ph.D., University of Arkansas, 1997

Research Interests: Quantum-mechanical estimate of a molecular wave function. Wide application of electronic structure calculations to predict structure, reactivity and spectroscopic properties of molecules. Special focus on recent developments in biological inorganic chemistry: structure and function of various metalloproteins and mechanisms of poisoning by heavy metals such as lead and mercury.

Grant Support: NIH SCORE, $200,000

Representative Publications


Research Opportunities

Laura Juszczak, Biophysical

Ph.D., New York University, 1992

Research Interests: The process of pathological protein aggregation, molecular characterization and environmental factors affecting the process.

Drug development for pathological protein aggregation diseases

The aggregation of proteins at metal surfaces.

The nanotechnology of metal surfaces for characterizing protein surface adsorption.

Methods: primarily spectroscopic: UV resonance Raman, surface-enhanced Raman, IR, steady-state fluorescence, absorbance and circular dichroism.

Representative Publications


Research Opportunities

Mark Kobrak, Physical

Ph.D., University of Chicago, 1997

Research Interests: Theoretical physical chemistry, specializing in quantum and classical dynamics in the condensed phase. Professor Kobrak’s current interest is in studying room-temperature ionic liquids, a class of molten salts relevant to green chemistry and of great technological interest.

Grant Support: PRF, $35,000

Representative Publications


Research Opportunities

Richard Magliozzo, Biochemistry

Ph.D., City University of New York, 1981

Research Interests: The research in my lab is currently devoted to exploring the origins of resistance to the antibiotic pro-drug isoniazid. We use spectroscopic and kinetics methods to study the structure and function of the heme enzyme catalase-peroxidase from M. tuberculosis, to learn why mutant enzymes are inactive for activation of isoniazid. This project is funded by the NIAID/NIH.

Grant Support: NIH/NIAID, $1,700,000

Representative Publications


Research Opportunities

Roberto Sanchez-Delgado, Inorganic, Organometallic

Ph.D., University of London, Imperial College of Science and Technology, 1976

Research Interests: Synthesis and characterization of new inorganic/organometallic compounds and materials and possible applications in: (i) the development of new catalysts for reactions related to the production of cleaner fossil fuels including the study of reaction mechanisms; (ii) the discovery of novel metal-based drugs against malaria and cancer and the study of their mechanisms of biological action.

Grant Support: NIH SCORE, $733,000; PRF: $100,000

Representative Publications


R. A. Sánchez-Delgado, N. Machalaba and N. Ng-a-qui. “Hydrogenation of Quinoline by Ruthenium Nanoparticles immobilized on poly(4-vinylpyridine)”. Catal. Commun. Accepted for publication 2007
## Faculty e-Mail Addresses

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