

We are looking for you!

Contact us:

Mailing address

Graduate Programs and Research
University of Puerto Rico, Río Piedras Campus
PO BOX 70377
San Juan, PR 00936-8377

Physical address

Graduate Programs and Research
University of Puerto Rico, Río Piedras Campus
Natural Sciences Building, Phase II
Room C-164
San Juan, Puerto Rico

Phone

(787) 764-0000 ext. 7443

Website

<http://chemistry.uprrp.edu>



University of Puerto Rico
Río Piedras Campus
College for the Natural Sciences
Chemistry Department

University of Puerto Rico
Río Piedras



Chemistry Department
Ph.D. Research Program



GRADUATE PROGRAM

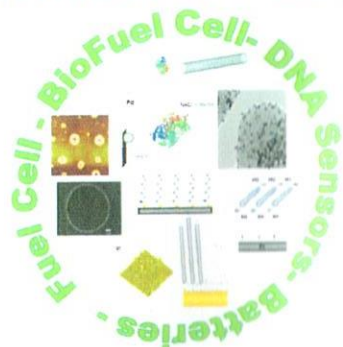
Chemistry Graduate Program Mentors

Materials Science Research



Cabrera Lab: Electrochemistry and Interface Laboratory

- **Research interests**
 - Development of nanoenergetic materials for sustainable energy systems such as regenerative fuel cells and Li-ion batteries.
 - Nanostucturing biomaterials for biofuel cells, biosensors and bioreactor systems.
 - Combinatorial methods.
 - Polymer electrolyte membranes for energetic systems.
- **Main techniques & instrumentation**
 - Electrochemical Techniques
 - Surface Analysis Techniques
 - Electron and Scanning Probe Microscopies
 - Fuel Cell Test Station



carlos.cabrera2@upr.edu



Chen Lab: Computational Chemistry & Computational Nanomaterials Science

<http://chemistry.uprrp.edu/people/faculty/zhongfang-chen>

- **Research interests**
 - Our laboratory is performing computations on a broad range of nanomaterials, investigating their intrinsic properties, designing new materials with desired properties, and studying their effects to environment and human health.
 - Computational chemistry, physical chemistry, Nanomaterials
- **Main techniques & instrumentation**
 - Various computational programs such as Gaussian 03, DMOP and VASP.
 - A high performance PC cluster and good access to supercomputers.



zhongfangchen@gmail.com



UPR-RP Chemistry Graduate Program
<http://chemistry.uprrp.edu>

Chemistry Graduate Program Mentors

Materials Science Research



Pinero Lab: Coordination Chemistry

Contact Info: dalicempinero@gmail.com

- **Research Interests:**
Synthesis of metal complexes and multidimensional networks for their application in Materials Science and Nanomedicine.

Students interested in working on these projects may send their CV to the contact info.

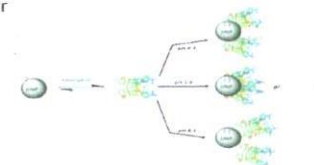
- **Main Techniques & Instrumentation**
 - Organic and Inorganic synthesis including air sensitive techniques, Single Crystal X-ray Diffraction, UV/Vis, Electrochemistry and Spectroelectrochemistry, Contrast Agent Analyzer



Nicolau Lab: Analytical applications of bio-nanomaterials

Eduardo Nicolau, Ph.D.
eduardo.nicolau@upr.edu

- **Research interests**
 - Preparation of interfaced bionanomaterials for reactive water purification membranes
 - Development of point-of-use sensors for the detection of emerging contaminants in water
 - Synthesis and characterization of nanomaterials for electrooxidation of high-density fuels.
 - Development of analytical methodology through chemometrics.
- **Main techniques & instrumentation**
 - FTIR, Raman, Zeta potential, DSC, TGA, UV, XPS, AFM and X-ray diffraction techniques.



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Chemistry Graduate Program Mentors

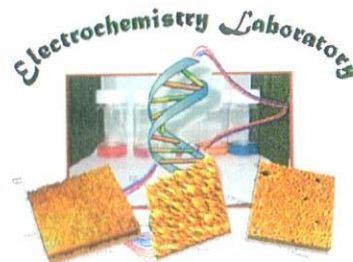
Materials Science Research



Ana R. Guadalupe, Ph.D.: Analytical Chemistry

lupita1029@gmail.com

- Research interests
 - Biosensors and Chemical Sensors
 - Polymers, Modified Electrodes, Electrocatalysis
- Main techniques & instrumentation
 - Synthesis of polymers and redox-active molecules
 - Electrochemistry, NMR, FT-IR, UV-Vis, HPLC- light scattering, AFM, XPS



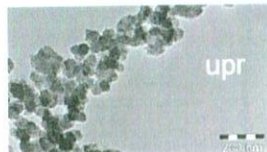
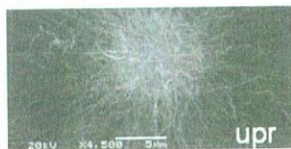
Weiner Lab: Physical Chemistry

<http://www.prnano.com/>

brad@hpcf.upr.edu

Research interests

- o Physical Chemistry: Gas Phase Molecular Reaction Dynamics; Laser Photochemistry and Photophysics; Gas Phase Kinetics of Reactive Intermediates; Non-Linear Photoprocesses; Molecular Energy Transfer; Mechanisms of Laser Ablation.
- o Synthesis, study of the synthesis process, and characterization of novel nanocrystalline, nanocomposite, and microcrystalline carbon-based and related materials searching for enhanced physical and chemical properties that lead to novel technological applications.



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Chemistry Graduate Program Mentors

Materials Science Research



López Lab: Analytical Chemistry Design, Applications, and Mechanistic Studies of Crystallizations on Surfaces

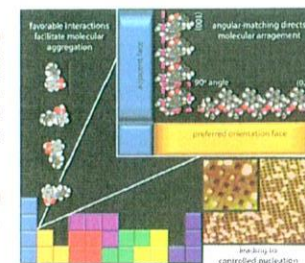
<https://www.youtube.com/channel/UCelqQTVkd8PIAxilekicgA>
vilmali.lopez@upr.edu

Research Interests,

To design heteronucleation platforms for three major crystallization efforts: to gain understanding of the fundamental factors that affect nucleation in molecular compounds, to promote or inhibit heterogeneous nucleation in chiral and achiral compounds, and to access, stabilize and deliver pure thermodynamically unstable solid-forms and/or pure enantiomers of pharmaceuticals, energetic materials, and electronic materials for novel applications.

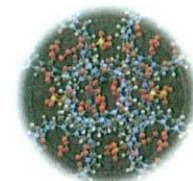
Main Techniques and Instrumentation,

Powder and Single Crystal X-ray Diffraction, Raman, Infrared, and UV-Vis Spectroscopy, Quartz Crystal Microbalance (QCM-D), Microscopy, High Performance Liquid Chromatography (HPLC), Surface Analysis (AFM/SEM) and Thermal Analysis (TGA/DSC).



Fulvio Lab: Physical Chemistry

- Research Interests
 - Self-assembly of building blocks into hierarchical porous frameworks, and biomimetic membranes
 - Nanomaterials with biocompatible surface groups
 - Energy storage, conversion, separations, and heterogeneous catalysis
- Main techniques
 - Gas physisorption, TPD, thermal analysis, X-ray and neutron scattering, S/TEM, FTIR, Raman, NMR, cyclic voltammetry, impedance spectroscopy



pasqualefulvio@gmail.com



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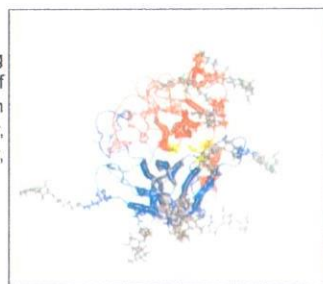
Biomedical, Biochemical, and Bioorganic Research



Griebenow Lab:
Applied Biochemistry and Biotechnology
<http://chemistry.uprrp.edu/people/faculty/kai-hans-griebenow>

- Research interests

- Exploration of interdisciplinary subjects involving protein biochemistry and biophysics (e.g., effects of glycosylation / pegylation, relationship between protein structural dynamics and enzyme activity, liquid- / solid-state formulation and protein stability, non-aqueous enzymology, protein encapsulation).



kai.griebenow@gmail.com

- Main techniques & instrumentation

- Protein chemical modification, immobilization, enzyme activity assays, protein spectroscopy (FTIR, CD, UV, fluorescence), H/D exchange.

Chemistry Graduate Program Mentors

Biomedical, Biochemical, and Bioorganic Research



Arthur D. Tinoco:
Bioinorganic Chemistry
 Lab website: <http://tinocolab.weebly.com/>
 E-mail: atinoco9278@gmail.com

- Research interests

- Development of new drug design strategies for metal-based therapeutics with an emphasis on small molecule mimics of proteins as anticancer drug delivery agents
- Isolation and characterization of bioactive metal-proteins and metal-metabolites



- Main techniques & instrumentation

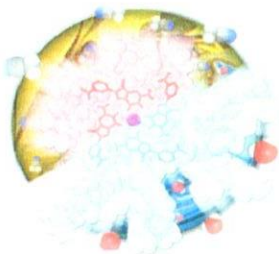
- Peptide synthesis, coordination chemistry, UV Vis, chromatography, MALDI TOF TOF, DSC, NMR, IR, X-ray crystallography



Rivera Lab: Organic Chemistry
<http://web.mac.com/jmrvortz/>

- Research interests

- To develop a variety of complex self-assembled multi-functional nanostructures to be used in biomedical applications.
- supramolecular, bioorganic, nanoscience



riveralab.upr@gmail.com

- Main techniques & instrumentation

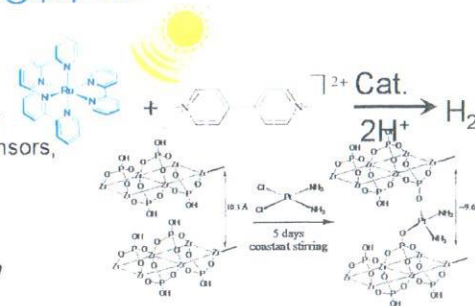
- Organic synthesis, chromatography, NMR, DSC, UV/Vis, microwave reactor, VPO, HPLC (PDA/RI), IR



Colón Lab: Inorganic Chemistry
jjcolon@uprrp.edu

- Research interests

- To develop layered inorganic nanomaterials for solar energy utilization, chemical and biosensors, and drug delivery.
- Materials, photochemistry, bioinorganic



- Main techniques & instrumentation

- X-ray powder diffraction, UV-vis, luminescence spectroscopy, cyclic voltammetry, IR, XPS, NMR

jorge1962cr@gmail.com



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Chemistry Graduate Program Mentors

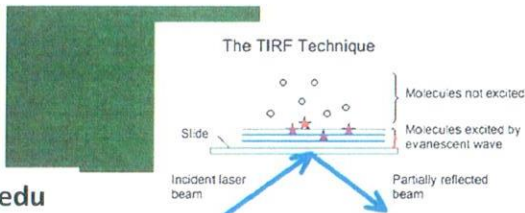
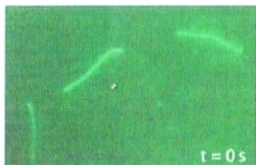
Biomedical, Biochemical, and Bioorganic Research



Dr. Edwin Quiñones: LASER Laboratory <http://equinones.uprrp.edu/>

Research Interests

Kinetic studies of enzymes engaged in DNA metabolism at the single-molecule level, protein folding, DNA mechanical properties, fluorescence spectroscopy and laser spectroscopy of small molecules.



edwin.quinones3@upr.edu

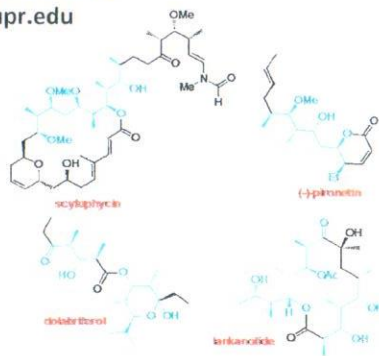


Prieto Lab: Organic Chemistry

<http://www.organiclab.uprr.edu>

Jose.prieto2@upr.edu

- Research interests
 - The development of new methodologies for the synthesis of biologically active compounds.
 - Synthesis, organometallics, polypropionates, Lewis acids.
- Main techniques & instrumentation
 - Organic synthesis, microwave assisted reactions, molecular modeling, chromatography, NMR, IR, MS



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Chemistry Graduate Program Mentors

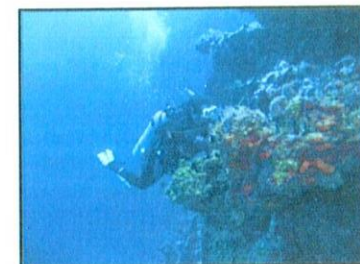
Research on Natural Bioactive Products



Rodríguez's Lab: Marine Natural Products Chemistry

abimael.rodriguez1@upr.edu

- Research interests
 - Collection of Caribbean marine invertebrates, extraction, purification, structure elucidation, and synthesis of bioactive marine natural products.
- Main techniques & instrumentation
 - HPLC, HPLC/MS, CC, SEC, IEC
 - ^1H and ^{13}C NMR, MS, IR, UV and X-ray diffraction techniques.



Carballeira's Lab: Organic Chemistry

<http://chemistry.uprrp.edu/people/faculty/nestor-m-carballeira>

nestor.carballeira1@upr.edu

- Research Interests
 - Isolation and synthesis of new fatty acids of marine origin with antiplasmodial and antifungal activity.
 - Lipid Chemistry, marine natural products, bioorganic chemistry
- Main techniques & Instrumentation
 - Organic synthesis, Gas Chromatography-Mass Spectrometry (GC-MS), NMR, IR, Modern techniques in lipidology



Sponge *Erylus goffrilleri*



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Chemistry Graduate Program Mentors

Chemical Education



Montes Lab: Organic Chemistry and Chemistry Education

ingrid.montes2@upr.edu

• Research interests

- **Chemistry education:** How the learning styles affect and influence the teaching-learning process in the Organic Chemistry course for majors.
- **Organic chemistry:** Synthesis and characterization of ferrocene derivatives known as ferrocenyl chalcones.
- ferrocene, green chemistry, chemistry education

• Main techniques & instrumentation

- Organic synthesis, chromatography, NMR, UV/Vis, IR



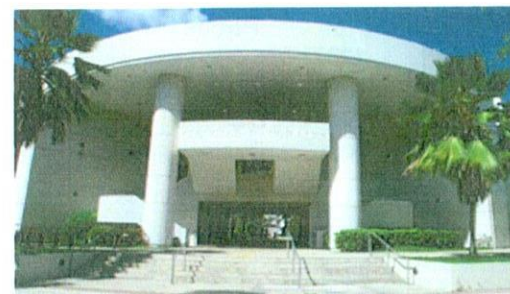
Dr. Ingrid Montes
Research Lab

Research Buildings

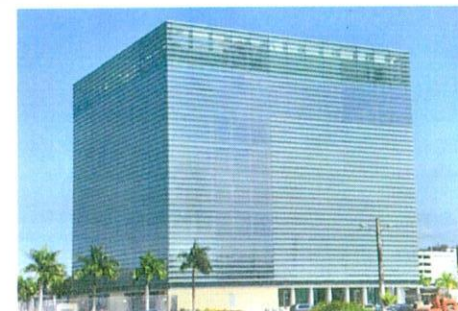
Facundo Bueso



Natural Sciences



Molecular Science Building



Díaz-Vázquez Lab:

Chemical Education, Renewable Energy & Sustainability

Research Interests: lizvazquez8@gmail.com

Chemical Education: Improvement of students learning process using an interdisciplinary approach and different strategies such as cooperative learning, POGIL (Process Oriented Guided Inquiry Learning) and peer lead team work. Integration of authentic research experiences through the chemistry curriculum.

Renewable Energy & Sustainability: Exploration of the use of macro and microalgae as a sustainable feedstock for simultaneous carbon capture, bioremediation of wastewater, refining and recycling in bio-fuel production. Our efforts include the assessment of alternative, valuable bioproducts based on their unique characteristics and broad distributions in different algal species. Fabrication of Nanostructured materials for removal and sensing of emerging pollutants in natural waters.

Main Techniques and Instrumentation: Solid Phase Extraction (SPE), SPME, Thermo chemical Liquefaction (TCL), Gas Chromatography (GC/MS), HPLC, Fluorescence, FTIR, Supercritical Fluid Extraction, chemical modification.



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