

Research Opportunities in Chemistry

The Department of Chemistry and Physics has several research programs open to undergraduate and graduate students. Below is a list of our researchers. Their projects have been categorized by the five main disciplines of chemistry, the applications of their work, and a description of what type of work you would do in the laboratory.

<i>Research Advisor</i>	<i>Analytical</i>	<i>Biochemistry</i>	<i>Inorganic</i>	<i>Organic</i>	<i>Physical</i>	<i>Biological</i>	<i>Environmental</i>	<i>Forensics</i>	<i>Materials</i>	<i>Measurement</i>	<i>Theory</i>	<i>Synthesis</i>
Atterholt, Cynthia A.	✓						✓		✓	✓		
Butcher, David J.	✓						✓			✓		
De Silva, Channa R.			✓		✓	✓			✓		✓	✓
Dinkelmeyer, Brian D.				✓	✓				✓	✓		✓
Evanoff, David	✓				✓			✓	✓	✓		✓
Gainey, Maria		✓				✓				✓		
Hikkaduwa Koralege, Rangika					✓	✓	✓		✓	✓		✓
Huffman, Carmen					✓		✓		✓	✓		
Huffman, Scott	✓				✓			✓	✓	✓	✓	
Kwochka, William R.				✓					✓			✓
Perera, Nuwan	✓							✓	✓	✓		
Summers, Jack S.		✓	✓	✓		✓				✓		✓
Wallen, Jamie R.		✓				✓				✓		

The reverse side of this flyer gives a brief description of each researcher's current projects. You will find more detailed descriptions at our website: <http://chemistryandphysics.wcu.edu>. Do not hesitate to contact your academic advisor or one of us directly to discuss research opportunities.

Cynthia Atterholt *analytical*



We study pheromones used for mating disruption as an alternative to the use of pesticides. We also measure rheological properties of aqueous emulsions used as carriers for the controlled release of pheromones.

David J. Butcher *analytical*



Our research involves identifying and quantifying chemical compounds in plants to characterize both their resistance to pollutants and infection and their viability for phytoremediation, the removal of toxic substances from soil.

Channa R. De Silva *inorganic*



Research is focused on synthesis, characterization, and computational studies of inorganic complexes and nanoparticles with biomedical interest. We perform toxicological and antimicrobial studies of the designed materials.

Brian D. Dinkelmeyer *organic*



Our group studies mechanisms of photoinduced reactions that occur within crystal structures using x-ray diffraction, infrared spectroscopy and other advanced measurement techniques.

David Evanoff *analytical*



We synthesize new types of metallic nanostructures and study these structures' unique interactions with light. We also fabricate nanostructure assemblies for sensing and energy harvesting/conversion applications.

Maria Gainey *biochemistry*



Current projects involve determining the mechanisms of transcriptional regulators and immune defense proteins used by bacteriophages (viruses that infect bacteria), and bacteriophage genomics.

Rangika Hikkaduwa Koralege *physical*



We synthesize, characterize, and surface functionalize nanoparticles for biomedical applications such as MRI contrast agents and targeted delivery of therapeutics. We also study the health and environmental hazards of suspended fullerenes.

Carmen Huffman *physical*



We investigate the relative strengths of noncovalent interactions. Example systems include heavy metal ions bound to natural product substrates (such as peanut hulls) for environmental remediation purposes.

Scott Huffman *analytical*



Our group focuses on the development of non- or minimally destructive chemical characterization methodologies of historically important objects such as pottery, textiles and paintings.

William R. Kwochka *organic*



Our research group utilizes the interactions between Lewis bases and acids to assemble groups of small molecules into larger molecular systems. The goal is to prepare systems which mimic the function of macroscopic machines.

Nuwan Perera *forensic/analytical*



Our research focuses on forensic examination of automotive paints. We develop new analytical methods to facilitate the vehicle identification process from paint samples found at hit and run accidents using spectroscopy and data analysis.

Jack S. Summers *inorganic*



Our research involves studying the properties of transition metal complexes that could lead to the initiation and propagation of diseases.

Jamie R. Wallen *biochemistry*



Our research uses a variety of biochemical techniques to understand at the molecular level how multiple proteins communicate in order to accurately copy both the leading and lagging strands of DNA.

Interested in research? Reach out to us! See chemistry.wcu.edu for more information and contacts or speak to your academic advisor.