CALIFORNIA STATE UNIVERSITY, FULLERTON
DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY
Faculty Research Interests

RYAN CAMMAROTA
Assistant Professor
(Organic Chemistry)
Office: MH-582C
Email: rcammarota@fullerton.edu

Organic and organometallic chemistry research focused on applying interpretable machine learning algorithms to make predictions about reaction outcomes and molecular properties. Specific areas of interest include uncovering structure-reactivity relationships in sustainable metal-catalyzed coupling reactions and investigating reaction mechanisms using NMR spectroscopy and cyclic voltammetry. Students will learn to make molecules, measure their properties, and use modern computational and data science tools to predict how they will react.

JULIA CHAN
Associate Professor
(Chemistry Education)
Office: MH-543A
Email: juliachan@fullerton.edu

(1) Studying the effect of affective characteristics (attitudes, self-concept, and motivation) on achievement in general and organic chemistry classes
(2) Studying ways to enhance students' affective characteristics, metacognition, and achievement through student-centered group learning pedagogies
(3) Developing informational workshops to promote growth mindsets and effective studying and learning strategies in and outside of the classroom.

KENNETH CHILDERS
Assistant Professor
(Biochemistry)
Office: MH-582G
Email: kchilders@fullerton.edu

Biochemical and structural characterization of proteins involved in thrombotic and cardiovascular disorders. Proteins are recombinantly expressed and purified in our lab and used to study protein-protein and protein-ligand interactions. Structural studies incorporate X-ray crystallography to elucidate allosteric networks regulating enzymatic activity. Students also utilize lipid nanodiscs to study membrane-bound protein complexes.

JOYA COOLEY
Assistant Professor
(Inorganic/Materials Chemistry)
Office: MH-507
Email: jcooley@fullerton.edu

Design, synthesis, characterization of solid-state inorganic intermetallic and ceramic materials towards developing design principles for functional materials. Manipulating structure, oxidation-, and spin-states through chemical tuning toward understanding and developing design principles over (1) color and opacity in inorganic pigments and (2) negative-and zero-thermal-expansion materials. Additionally, (3) developing innovative synthesis in domestic kitchen microwave ovens toward developing rapid-synthesis methods and control of properties (such as particle size) linked to material properties.

DANIEL CURTIS
Associate Professor
(Analytical Chemistry)
Office: MH-582H
Email: dcurtis@fullerton.edu

Spectroscopic properties of atmospheric aerosol particles. Laboratory and field measurements of the absorbance and scattering of light by naturally occurring aerosol particles and their interaction with pollution gases to determine their effect on global climate and visibility.

MICHAEL FERRACANE
Assistant Professor
(Organic Chemistry)
Office: MH-582J
Email: michaelferracane@fullerton.edu

Research focuses on the design, synthesis, structural analysis, and evaluation of peptides and glycopeptides. Currently studying the structure-activity relationship of opioid peptides to develop better treatments for pain and/or addiction. Also studying O-glycoprotease enzymes and their ligands to better understand this enzyme family's role in bacterial pathogenesis and potential use as research tools.

ALLYSON FRY-PETIT
Associate Professor
(Analytical/Inorganic/Materials Chemistry)
Office: MH-510
Email: afry@fullerton.edu

Materials chemistry research on structure-property relationships in technologically interesting materials using data mining, synthesis and exploration of new and poorly understood compounds, as well as developing new analytical tools for understanding vibrations in solids. In addition to computation and synthetic tools, instrumentation used spans spectroscopic and diffraction techniques both in-house and at national labs.

MICHAEL GROVES
Associate Professor
(Theoretical Physical Chemistry)
Office: MH-582K
Email: mgroves@fullerton.edu

Development of machine-learning algorithms in order to theoretically determine the structure of chemically relevant nanoparticles and surfaces; computationally determine the chemical reactivity of surfaces in applications ranging from energy generation and storage to pharmaceutical synthesis in collaboration with experimentalists.

CALIFORNIA STATE UNIVERSITY, FULLERTON

JOHN HAAN
Professor
(Analytical Chemistry)
Office: MH-582B
Email: jhaan@fullerton.edu

Electrochemistry to address alternative energy options, particularly those related to fuel cell technology; development of new catalysts and fuels; probing the chemistry of fuel cell reactions.

PAULA HUDSON
Associate Professor
(Analytical Chemistry)
Office: MH-585
Email: phudson@fullerton.edu

Chemical and physical processes of atmospherically relevant surfaces and aerosols using Fourier transform infrared spectroscopy, quantitative adsorption methods and particle sizing instrumentation.

NIROSHIKA KEPPETIPOLA
Associate Professor
(Biochemistry)
Office: MH-501C
Email: nkeppetipola@fullerton.edu

Post-translational modifications (PTMs) in splicing regulatory proteins and their effect on splicing regulation. Focus on PTMs in the splicing regulatory protein family: polypyrimidine tract binding protein (PTB) and homolog neuronal PTB. Extend studies to other splicing regulatory proteins such as the RNA binding Fox family of proteins. Our studies will utilize both *in vivo* and *in vitro* assays and related tissue culture and biochemical techniques.

STEVAN PECIC
Associate Professor
(Medicinal/Bioorganic Chemistry)
Office: MH-582E
Email: specic@fullerton.edu

(1) Development of novel inhibitors of enzymes involved in lipid metabolism and their evaluation as potential therapeutics using traditional medicinal chemistry techniques (*in silico* drug design, synthesis, structure-activity relationship (SAR) studies and *in vitro* biological assays). (2) The identification of DNA-aptameric sensors for small molecules in so-called structure-switching format using SELEX procedure. We are in particular interested in aptamers for small molecules such as steroids and drugs that regulate pain and inflammation.

ANDREW PETIT
Associate Professor
(Theoretical Physical Chemistry)
Office: MH-531A
Email: apetit@fullerton.edu

Computational photochemistry. Current research interests include developing structure-function relationships in photobases, determining the mechanism of light-driven organic reactions involving reactive intermediates, and modeling the photochemistry of the atmospherically relevant radicals NO and OH. Students will learn high-performance computing, quantum chemistry, and the interplay between theory and experiment.

MADELINE RASCHE
Professor
(Biochemistry)
Office: MH-513B
Email: merasche@fullerton.edu

Biochemical, genetic, and genomic approaches to identify the genes and characterize the enzymes involved in the biosynthetic pathways of selected archaeal coenzymes and potential applications for modulation of biological methane production and utilization by microorganisms of environmental importance.

FU-MING TAO
Professor
(Physical Chemistry)
Office: MH-539A
Email: ftao@fullerton.edu

Theoretical study of molecular structure and interactions using advanced computational programs and technologies; application of computational chemistry to the investigation of environmental and biological problems, in collaboration with experimental scientists.

SACHEL VILLAFAÑE
Associate Professor
(Chemistry Education)
Office: MH-535A
Email: svillafane@fullerton.edu

Understanding how curriculum influences students' learning, interest in science, and preparation for the workforce by: (1) Using quantitative and qualitative methods to understand different cognitive and affective factors, (2) Using instruments that produce reliable and valid results to inform, evaluate, and improve instruction, (3) Understanding instructors' decisions about the use of assessments to inform instruction.

CSUF Department of Chemistry & Biochemistry Information: The Department of Chemistry and Biochemistry is located at California State University, Fullerton in McCarthy Hall room 580. The department phone number is (657) 278-3621. Office hours are Monday - Friday, 8:00 AM to 5:00 PM. Department Chair is Dr. Niroshika Keppetipola (Email:nkeppetipola@fullerton.edu).