

## The Stauffer-Fletcher Jones Chemistry & Biochemistry Faculty Mentors 2026

1. Dr. Dan Dries, Assistant Professor of Chemistry Education
2. Dr. Vincent Esposito, Assistant Professor of Chemistry
3. Dr. Chris Kim, Interim Dean of Schmid and Professor of Environmental Geochemistry
4. Dr. Jerry La Rue, Assistant Professor of Chemistry (Physical Chemistry)
5. Dr. Lorenzo Leiva Araya, Postdoctoral Associate and Dr. Michael Ibba, Provost and Professor of Microbiology
6. Dr. Cecilia Lopez, Assistant Professor of Biochemistry
7. Dr. Andrew Lyon, Professor of Chemistry (Materials Chemistry)
8. Dr. Magy A. Mekhail, Assistant Professor of Chemistry, Chapman University
9. Dr. Cedric Owens, Assistant Professor of Biochemistry

### [Dr. Daniel \(Dan\) Dries, Assistant Professor of Chemistry Education, Chapman University](#)

Contact: [ddries@chapman.edu](mailto:ddries@chapman.edu); Keck 294

Dr. Dan Dries is a chemistry education researcher and associate professor in the Schmid College of Science and Technology at Chapman University. Dan received his Bachelor's degree in Biochemistry with Honors from the University of Delaware and his Ph.D. from the lab of Dr. Alexandra Newton at the University of California San Diego. Trained in protein and lipid biochemistry, Dan then applied his methods to molecular neurodegeneration by studying Alzheimer's disease in the lab of Dr. Gang Yu at UT Southwestern Medical Center in Dallas, Texas. Prior to coming to Chapman, Dan was an Associate Professor and Chair of Chemistry and Biochemistry at Juniata College in central Pennsylvania. Recently, Dan pivoted his scholarly work into STEM education, where he now uses motivational and identity theory to examine how best to structure learning environments where all students can be successful. Dan has mentored over 70 students, many of whom have moved into post-graduate work and careers in science, education, and medicine.

#### External Resources

- LinkedIn: [www.linkedin.com/in/danieldries](https://www.linkedin.com/in/danieldries)
- Google Scholar: <https://scholar.google.com/citations?user=TNU-DpMAAAAJ&hl=en&authuser=1>
- Orcid: <https://orcid.org/0000-0002-0530-5212>

### [Dr. Vincent Esposito, Assistant Professor of Chemistry, Chapman University](#)

Contact: [vesposito@chapman.edu](mailto:vesposito@chapman.edu); Keck 232

Dr. Vincent Esposito is a computational chemist who specializes in studying the chemistry of space (also called astrochemistry). He received a B.S. in chemistry from the University of South Carolina, a Ph.D. in chemistry from the University of Pennsylvania and completed his postdoc in the Astrophysics Branch at the NASA Ames Research Center. In the Esposito Lab, we study the spectroscopy of astromolecules to help telescopes detect them in space. We also explore formation and destruction mechanisms of molecules both in the interstellar medium and planetary atmospheres, such as Saturn's moon Titan. Computational chemistry is a great way to begin doing research, as no prior knowledge or skills are required! We will teach you everything you need to know.

#### External Resources:

- Lab website (under development): <https://esposito-research-lab.github.io/>
- ORCID: <https://orcid.org/0000-0001-6035-3869>
- Google Scholar: <https://scholar.google.com/citations?user=LPXzhPMAAAJ&hl=en>
- Contact: [vesposito@chapman.edu](mailto:vesposito@chapman.edu)

### [Dr. Christopher Kim, Interim Dean of Schmid College and Professor of Environmental Geochemistry, Chapman University](#)

Contact: [cskim@chapman.edu](mailto:cskim@chapman.edu); Keck 231

Dr. Christopher Kim is an environmental geochemist, professor, and the interim dean at the Schmid College of Science and Technology at Chapman University. He received his A.B. in geology from Princeton University and his Ph.D. in geological and environmental sciences from Stanford University. Dr. Kim's research interests include arsenic contamination in abandoned mine lands and the reactive properties of iron oxyhydroxide nanoparticles. He is passionate about providing undergraduate students with independent research experiences in his lab, having mentored over 90 students who have gone on to graduate study (in chemistry, environmental science, civil/environmental engineering, and geology), careers in science education, and professional programs including dental school, veterinary school, and medical school. Undergraduate research is a great learning environment and launchpad to a wide variety of future pursuits!

#### External Resources

- [Kim Environmental Geochemistry \(KEG\) Lab website](#)
- [Faculty Profile Video of Dr. Kim discussing research in his lab and the benefits to students](#)

#### [Dr. Jerry La Rue, Associate Professor of Chemistry, Chapman University](#)

Contact: [larue@chapman.edu](mailto:larue@chapman.edu)

#### Education/Training:

- 2011-2015 Postdoctoral Scholar, SUNCAT Center for Interface Science and Catalysis, Stanford University / SLAC National Accelerator Laboratory; Advisor: Professor Anders Nilsson
- 2005-2011 Ph.D. in Chemistry, Department of Chemistry, University of California at Santa Barbara; Advisor: Professor Alec Wodtke
- 2000-2004 B.A. in Chemistry, Department of Chemistry, Willamette University

#### Research Interests:

Catalysts are the unsung heroes of chemistry: Widely used in industry, they speed up chemical reactions by making the reactions much more efficient. Many important reactions related to global issues, such as climate change and carbon-neutral fuel production, take place on the surfaces of metal catalysts. Today we know very little about how these reactions proceed. Dr. LaRue's research interests are aimed at understanding the most fundamental processes that occur during chemical reactions on these catalytic surfaces and how to manipulate them using light to control reactivity. His current research projects involve using ultrafast optical techniques, X-ray spectroscopy, and other forms of spectroscopy to study the elementary steps of chemical reactions on metal crystals and nanoparticles.

Keywords: Heterogeneous catalysis, surface science, lasers, X-rays, physical chemistry, spectroscopy, nanomaterials, metals, nanoparticles, ultrafast

#### External Resources:

- Website: [LaRue Cat Lab](#)
- LinkedIn: [www.linkedin.com/in/jllarue](http://www.linkedin.com/in/jllarue)
- Instagram: [www.instagram.com/cu\\_catlab](http://www.instagram.com/cu_catlab)
- Facebook: <https://www.facebook.com/cucatlab/>
- Google Scholar: <https://scholar.google.com/citations?user=dVNM3lwAAAAJ&hl=en>

#### [Dr. Lorenzo Leiva Araya, Postdoctoral Associate and Dr. Michael Ibba, Provost and Professor of Microbiology, Chapman University](#)

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Dr. Leiva finished his B.Sc. and M.Sc. in Biochemistry from Universidad de Chile, Santiago, Chile. Then he finished his Ph.D. in Microbiology from Universidad de Chile, Santiago, Chile. Dr. Leyva's interest has been in understanding the role of the bacterial translation machinery during stress conditions. To continue his journey, he joined Chapman University for a postdoctoral position to work with Prof. Michael Ibba on antibiotic stress response.

His research is currently focused on understanding the role of some molecules synthesized by translation machinery, which mimic the molecules used by bacteria to communicate and regulate gene expression. The goal is to understand how bacteria use these molecules to communicate with each other and coordinate the bacterial response that allows them to frequently tolerate antibiotic treatments. His research routinely uses genetic tools to clone genes and the expression of fluorescent proteins to follow the progression of the bacteria during different treatments.

**External resources:**

- Group's Website: [Drugs N Bugs Lab | Ibba Lab](#)
- LinkedIn: <https://www.linkedin.com/in/lorenzo-leiva-araya-a0650816/>

**[Dr. Cecilia Zurita Lopez, PhD, Assistant Professor of Biochemistry, Chapman University](#)**

Contact: [ceclopez@chapman.edu](mailto:ceclopez@chapman.edu), Keck 235

**Dr. Lopez** received her Bachelor of Science in Biochemistry from California State University, Los Angeles (Cal State LA). During her undergraduate research tenure, she presented her work at major national scientific meetings, including conferences hosted by the American Chemical Society (ACS) and the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS). She continued her scientific training at the University of California, Los Angeles (UCLA), earning a PhD in Biochemistry and Molecular Biology.

Following her doctoral work, Dr. Lopez completed a Postdoctoral Research Fellowship at the University of Southern California (USC) in the laboratory of Dr. Andrea Armani. Her postdoctoral research centered on the development of a non-invasive optical biosensing platform designed to detect epigenetic markers associated with early-stage cancer. This work involved integrating photonic materials with molecular recognition elements to enable highly sensitive detection of biomolecular signatures linked to malignancy. By targeting epigenetic modifications—specifically aberrant DNA methylation patterns and associated chromatin-level changes—her project aimed to contribute to earlier, more accurate identification of oncogenic transformation, a key challenge in improving cancer patient outcomes. The overarching objective of this research was to advance technologies capable of detecting cancer-related epigenetic alterations prior to the onset of clinically observable symptoms, thereby supporting earlier intervention and improved prognostic accuracy.

At Chapman, she directs the Lopez Laboratory, which investigates the regulatory roles of post-translational modifications, with a particular emphasis on the crosstalk between arginine methylation and phosphorylation. Her research program aims to elucidate how these modifications coordinate essential cellular signaling networks and how their dysregulation contributes to human disease. Ongoing projects examine proteins implicated in cancer, diabetes, multiple sclerosis, and cardiomyopathy, with the broad goal of defining modification-specific regulatory mechanisms that may inform targeted therapeutic development and facilitate individualized molecular profiling in clinical settings.

Dr. Lopez is dedicated to fostering a rigorous and inclusive research environment that supports interdisciplinary engagement from students across the natural sciences, including biology, biochemistry, chemistry, and physics. Her professional commitment to broadening participation in STEM is informed by her own experiences in programs designed to support students from historically underserved groups. At Chapman, she has mentored over 20 undergraduate students and remains strongly invested in creating research opportunities that advance diversity, equity, and inclusion in the scientific community.

**[Dr. Andrew Lyon, Professor of Chemistry, Chapman University](#)**

Contact: [lyon@chapman.edu](mailto:lyon@chapman.edu)

Dr. Andrew Lyon has over 25 years of experience as a chemist, bioengineer, educator, and entrepreneur and is currently a professor of chemistry at Chapman University in Orange, CA. He previously served as the Founding Dean of the Dale E. and Sarah Ann Fowler School of Engineering at Chapman University from 2019-2023, and as Dean of the Schmid College of Science and Technology at Chapman University from 2014-2018. Before arriving at Chapman, Dr. Lyon spent >15 years at the Georgia Institute of Technology as a member of the Chemistry & Biochemistry

faculty, serving as Associate Chair (2010-2013) and Chair (2013-2014), and directing a research program aimed at creating new types of biomaterials for regenerative medicine applications. In addition to his role at Chapman, he is the co-founder and Chief Scientific Officer of Sanguina, Inc. and SelSym Biotech, Inc. two early-stage biotechnology companies. Sanguina is a medical device company with two FDA 510(k) cleared devices for anemia determination, as well as a digital health tool that allows for the real time, non-invasive determination of anemia using only your smartphone camera. SelSym Biotech is aimed at commercializing a novel artificial platelet technology for applications in trauma and coagulopathy treatment. Dr. Lyon has also served as a Director (2015-2025) and Chair of the Board of Directors (2022-2025) of the Arnold and Mabel Beckman Foundation, an organization with a long and successful history of providing funding to young investigators in the physical and life sciences. Dr. Lyon is the recipient of the NSF CAREER, Beckman Young Investigator, Research Corporation Research Innovation, and Camille Dreyfus Teacher-Scholar Awards, an Alfred P. Sloan Fellowship, the National Fresenius Award, and the 2021 Distinguished Educator Award presented by the Orange County Chamber of Commerce. He is a Senior Member of the National Academy of Inventors.

#### **External Resources:**

- Group's website: [www.lyongroup.net](http://www.lyongroup.net)
- <https://www.chapman.edu/engineering/about/index.aspx>
- <https://www.pnas.org/content/114/5/885.short> : "Dynamic assembly of ultrasoft colloidal networks enables cell invasion within restrictive fibrillar polymers"

#### **Description of possible SFJ Projects:**

##### **Hydrogel Materials for Triggered Release**

This effort relates to the study of a new class of hydrogel "pastes" that can undergo rapid dissolution in response to external stimuli. These materials hold particular promise in the development of injectable drug delivery "depots" that dissolve and release their payload in response to infection or disease.

##### **Composite Biopolymers as New Tissue Scaffolds**

These studies employ composites between natural biopolymers (e.g., collagen) and synthetic hydrogel microparticles to create new types of tissue scaffolds with unique mechanical and cell proliferation properties. We expect these structures to hold promise for tissue regeneration, especially under conditions where specific mechanical properties are needed for surgical handling or support of load during healing.

##### **Responsive Microgel Assemblies for Bioanalysis**

We will explore the utility of microgel pastes in the fabrication of low-cost, disposable devices for diagnostics development. By harnessing the triggered swelling and dissolution properties of bioresponsive microgel pastes, we will design diagnostic devices appropriate for point of care testing.

##### **Single-Microparticle Mechanical Testing**

The "softness" of individual nano- and micro-particles is a vitally important parameter when tuning their interactions with biological systems. We have developed a new nanopore-based analytical tool for making single microparticle mechanical measurements. This work will expand upon our initial studies with the aim of creating a robust, semi-quantitative approach to making single particle mechanical measurements.

#### **[Dr. Magy A. Mekhail, Assistant Professor of Chemistry, Chapman University](#)**

Contact: Mekhail @chapman.edu; Keck 352

Dr. is an assistant professor of synthetic chemistry in the Schmid College of Science and Technology at Chapman University. She earned her Bachelor of Science in Chemistry from Texas A&M University and her Ph.D. in Inorganic Chemistry from Texas Christian University. Her doctoral work focused on the synthesis and characterization of transition-metal, pyridine-containing complexes for catalytic and therapeutic applications, providing her with a strong foundation in organic and inorganic synthesis, spectroscopy, and physical inorganic chemistry. Dr. Mekhail

then completed postdoctoral training at the University of California, Irvine, where she designed novel metal–ligand complexes for catalytic applications including CO<sub>2</sub> capture and conversion, and developed expertise in electrochemistry and water-soluble catalyst design. At Chapman, the Mekhail Synthetic Lab focuses on inorganic catalyst development to address pressing environmental challenges, with research projects centered on catalysis using earth-abundant metals (Fe, Mn, Co) for sustainable hydrogenation, as well as molecular electrocatalysis for PFAS degradation through nature-inspired cobalt systems. Dr. Mekhail is passionate about mentoring undergraduate researchers and engaging students in hands-on, curiosity-driven research that connects fundamental chemistry to real-world environmental solutions.

**[Dr. Cedric Owens, Assistant Professor of Biochemistry, Chapman University](#)**

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I'm an Assistant Professor of Biochemistry at Chapman University. After growing up and completing my Abitur (High School) in Bayreuth, Germany, I moved to Maine to obtain degrees in Chemistry and Mathematical Sciences from Colby College. For my Ph.D., I joined the lab of Dr. Celia Goulding at UC Irvine, where I studied heme uptake in *Mycobacterium tuberculosis* and *Bacillus anthracis*. After UC Irvine, I moved to UC San Diego, where I started investigating the mechanism of nitrogenase in the lab of Dr. Akif Tezcan.

My research is in enzymology. My laboratory works with proteins and while most people will tell you that their research is the most interesting in the world, I'm actually right. We are interested in metalloenzymes, which are a class of enzymes that contain metals. One metalloenzyme that is of special interest to us is nitrogenase. It is the only enzyme that breaks down N<sub>2</sub> (that's a triple bond) into ammonia, which plants need to grow. This by itself may or may not seem interesting to you, but there is much more to nitrogenase. The enzyme can carry out many other reactions in addition to making ammonia, meaning we can use nitrogenase to test the limits of what kind of chemistry enzymes are capable of. For example, studying nitrogenase may lead to developments in how to generate renewable H<sub>2</sub> gas, remove carbon monoxide from the atmosphere or make new types of catalysts.

**External Resources**

- Website: [The Owens Lab](#)