ITHACA COLLEGE

CHEMISTRY & BIOCHEMISTRY NEWSLETTER

Congratulations to our Class of 2024!

Jason Demers Biochemistry BS
Ariel Esteva Chemistry, BS
Lily Goulding Chemistry, BS
Birsen Gurkaynak Biochemistry, BS
Ranjini Iyengar Biochemistry, BS
Emily Leach Chemistry, BS
Morgan Miele Biochemistry, BS
Alexandra Montgomery Biochemistry, BS
Jake Perkins Biochemistry, BS
Noah Strathmann Biochemistry, BS
Quinn Tufino Biochemistry, BS
Caroline Wise, Biochemistry, BS

Highlights

New Faces in CNS!
Student Scholarships & Awards
Chemistry Meets Art in Italy
Multiple Alumni Seminars
Course Spotlight: Forensic Chemistry

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01/13

A NOTE FROM THE CHAIR

Greetings,

Andrew Torelli

It's been a minute since we sent our last update! However, it's not for lack of exciting news, activities, and accomplishments. We're very pleased to share our latest newsletter filled with highlights of our Class of 2024 graduates, recipients of our most prestigious named scholarships and awards, recaps of all eight of our invited alumni seminars, a description of Mike Haaf's sabbatical in Italy, Janet Hunting's Forensic Chemistry course in the spotlight, and other news from faculty labs and student clubs. We hope you enjoy catching up, and we're working hard to get back on track with our next newsletter. In the meantime, please keep in touch! As always, we love to hear from alumni with updates. Don't forget to let us know if you'll be in the area and would like to give a seminar to the current students - alumni talks are always in demand.

Sending you the best,
-Andy Torelli

NEW FACES IN THE CHEMISTRY DEPARTMENT

Katherine Olga Thompson

Katherine joined us as our new Laboratory Coordinator and safety liason. She is a naturalized Ithacan, having moved to town in 2010. Katherine is a self-professed waterfall enthusiast and will happily help you plan a hike in one of our many State Parks, or find a new and interesting thing to do in town. She loves the outdoors, social dancing, pottery, and her cats. Always quick to laugh or chat, Katherine deeply appreciates connecting with students and faculty during or outside of the lab and she is delighted to be working with us at Ithaca College!

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NEW FACES IN THE CHEMISTRY DEPARTMENT

Bryan Ferlez, PhD

Hello! My name is Bryan Ferlez and I am a new faculty member in the Chemistry Department (CNS 364). I joined the team at Ithaca College after finishing my post doctoral work at Cornell University. I'm a biochemist interested in understanding how and why bacteria build intracellular organelles made of proteins. Picture a nano-scale soccer ball-shaped factory containing thousands of chemists (proteins) all working together to convert difficult (or dangerous) to digest metabolites into energy and/or matter for bacterial growth. These organelles not only help bacteria survive in challenging environments, but they strongly shape them as well; for example, by fixing atmospheric carbon dioxide into sugars that support the complexity of life in the earth's biosphere, or, producing secondary metabolites in the human gastrointestinal tract that impact our cardiovascular health.

I am happy to announce that our research on these bacterial organelles is underway here at IC! I was very fortunate to work closely with two incredible biochemistry research students during the 2024 fall semester: Grace Burczak and Joelle Kernen. They taught me how to tie-dye lab coats and began developing an activity assay for bacterial organelles (Grace), and investigating the role of an organelle associated protein with an unknown function (Joelle). We also welcomed the arrival of our anaerobic chamber (with lots of help from Chun Li and Andy Torelli) that will be setup in CNS 374 and used to carry out oxygen-sensitive protein purification and activity assays.

Grace and Joelle are returning to my lab to continue their projects and will be joined by Diana Lazo. I can't wait to see what Grace, Joelle, and Diana's work shows us about bacterial organelle assembly and function, and look forward to sharing that work with the community – stay tuned!

Although they reflect work done prior to my arrival at IC, other updates from this Fall include publishing a patent on "*Modified Bacterial Microcompartment Shell Proteins*" as well as a manuscript on the "*Electrochemical Cofactor Recycling of Bacterial Microcompartments*" in the Proceedings of the National Academy of Sciences.

Lastly, I am excited to be teaching a new biochemistry lab course (BIOC 24000: *Experimental Biochemistry*). Students will gain experience putting the central dogma into practice, from DNA editing to protein purification and characterization, and use the fruits of their labor to investigate the in vitro assembly of supramolecular bacterial organelle architectures.

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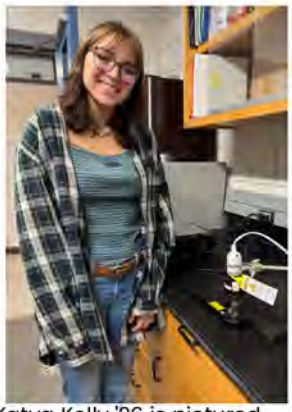
THANK YOU!

We wanted to take this opportunity to thank our alumni community for its support and engagement. You have made numerous activities, research, and learning experiences possible through sharing personal updates, networking with students, contributing to named student awards and funding for equipment, and returning to Ithaca to deliver seminars. Thank you!

An alumni donation made it possible for Rishabh Sen '26 to spend 10 weeks in the lab of another IC Chemistry alumnus, William C.K. Pomerantz '02 at the Univ. of Minnesota to work on organic synthesis and biophysical assays. Rishabh has presented this work in multiple venues and is continuing his work as part of an Honors Thesis.

From left to right: Nora Vail '20 (current UMN graduate student), Andrew McCabe '20 (current UMN graduate student), Rishabh Sen (during UMN research experience), Quinn Tufino '24, and Will Pomerantz '02 (IC Chemistry alumnus and current UMN faculty).



Katya Kelly '26 is pictured above next to the new LED UV PhotoRedox light reactor being used in Becky Craig's lab for her atmospheric chemistry research. This acquisition was made possible by the *Glenn Vogel & Bill Bergmark Chemistry Research Fund.*

Thanks to the *Glenn Vogel & Bill Bergmark Chemistry Research* and *H&S Annual Funds,* we obtained a new polarized light microscope, which helped Janet Hunting prepare her popular Forensic Chemistry advanced elective (see page 10 below!). Rayna Wallens '26 is pictured above.

An alumni donation helped Mariia Grebenkina '26 embark on a summer research experience in the lab of Michael Shatruk at Florida State University for 10 weeks to work on transition metal complexes and the coordination chemistry of tridentate pyridyl-thioether ligands. Mariia gained new experience with multiple techniques including NMR, mass spectroscopy, and single crystal X-ray diffraction. Mariia also presented her work at the spring 2025 ACS meeting in San Diego, CA (pictured at right).

Alumni Seminars

We were thrilled this year to welcome back 8 alumni who presented seminars to the department and students in our CHEM 48700 *Chemistry Seminar* course. All visiting speakers had lunch with students and often additional small group meetings to connect and share their experiences. Thank you for visiting!

Chemistry Department Sustained Excellence Award

We use our *Annual Fund* to award Miles Wheaton '25 the *Chemistry Department Sustained Excellence Award.* Miles was specifically recognized by the Chemistry Department faculty for distinguished achievement and exceptional future potential.

In addition, 5 other outstanding students were recognized with named awards for their achievements in various areas (read more on the next page!).

Thanks to the *Heinz & Judith Koch* and *Dr. Glenn C. Vogel & Dr. Marjorie R. Chelly '94 Chemistry Education Funds,* as well as support from the Humanities & Sciences Dean's Office and finally the Office of Access, Opportunity & Achievement, 12 students were funded to travel to the national meeting of the American Chemical Society Meeting in New Orleans, LA to present their own research posters!

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CHEMISTRY & BIOCHEMISTRY
STUDENT SCHOLARSHIPS & AWARDS

2024 ACS National Conference

Left to right: Lily Goulding '24, Quinn Tufino '24, Rishabh Sen '26, Lilly Johnson '25, Jason Demers '24, Caitlyn O'Dell '24, Noah Strathmann '24, Jake Perkins '24, Ariel Esteva '24, Miles Wheaton '25, Emily Leach '24, Ranjini Iyengar '24. Not pictured: Joey Rodas '24

Chemistry and biochemistry students presented their research at the 2024 American Chemical Society meeting in New Orleans, LA funded by alumni donations. Thank you!

Chemistry Department Sustained Excellence Award
Miles Wheaton '25

Chemistry Book Award
Ryann Tanner '26

Russell Drago Chemistry Award
Maddy Kim '26

Bill and Donna Bergmark Chemistry Scholar
Rishabh Sen '26
Ginny Illingworth '25

Roger Harris '80 Scholarship
Lilly Johnson '25

Glenn Vogel and Marjorie Chelley Chemistry Education Fund Award
Lilly Johnson '25

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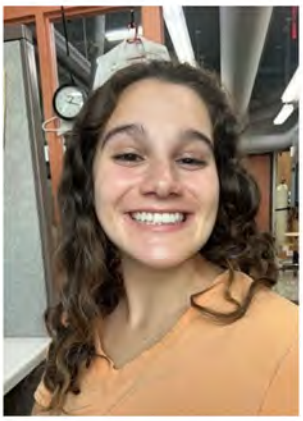
Fall 2024 Alumni Seminars

Fred Lasky '67, PhD

Regulatory and Quality Systems Consulting
September 5th, 2024

"Transitions"



Liv Grogan '22

PhD candidate Syracuse University, NY
September 24, 2024

"Evaluating the role of superoxide (O_2^-) in marine waters"

We love having chemistry alumni visit for talks! Interested? Please email chemistry@ithaca.edu

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Kito Gilbert-Bass '19, PhD

Then a PhD Candidate, UC Irvine

along with

Rain Talosig '19, PhD

Lawrence Berkely National Labs

October 8, 2024

Ithaca College Chemistry Leading to Graduate Study in Metal Organic Frameworks and Rare Earth/Actinide Organometallic Chemistry

Andy Kielbania '69, PhD

October 8th, 2024

Aqueous Latex Specialty Chemical Research

Yongqian Kelly Zhang'14, PhD

Analytical Research & Development, Merck

October 15, 2024

From Classroom to Workforce: My Journey to Merck

Julian Kellner-Rogers '20, PhD

Then a PhD Candidate, Cornell University

October 22, 2024

Hydrazine-Catalyzed Ring-Opening Metathesis Polymerization of Cyclobutenes

Mike Haaf '94, PhD

Professor, Chemistry Department, Ithaca College

November 12, 2024

First insights into the formation of metal soaps in alkyd-based paints

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Mike Haaf '94 Sabbatical

I had the great opportunity and privilege to spend my sabbatical in spring 2024 in Torino, Italy. I spent a few months working at the Center for Conservation and Restoration at La Venaria Reale (www.centrorestaurovenaria.it/scienza/), doing research on metal soap formation in modern alkyd paints. We made good progress and presented our initial findings at the Techno Heritage Conference in Santiago de Compostela in Spain (https://technoheritage2024.com/). On top of that, I had the chance to observe and participate in the studies of many other cultural heritage objects, including 4000 year-old Egyptian artifacts, a Donatello sculpture, a painting attributed to Manet, carpets, tapestries, and even more modern objects, like a hand-painted 1964 Fiat.

Sandy and I loved immersing ourselves in the rural town of La Venaria, and loved walking to our grocery stores, cafes, and bakeries, with the Alps in the background.

Of course, we also took full advantage of our proximity to the rich variety of truly unique places in Italy (and in a couple of places in Switzerland). We visited Rome, Pompeii, Sorrento, Positano, Verona, Milan, Venice, Verona, Cinque Terra, the Dolomites, Lake Como, Geneva, Lucerne, often accompanied by very dear family and friends. In a

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nutshell, it was a literal dream come true.

When I think back on this amazing experience, the sights, the food, the wine, the artwork, and the culture of course all come to mind. But even more, I think about the wonderful people who made our visit there so special. I am forever grateful to the friends and colleagues I had the good fortune to meet there, as well as those who came to visit us. A special thank you goes to Dr. Federica Pozzi, Dr. Tommaso Poli, Dr. Anna Piccirillo, and many others who made our time there among our most cherished memories.

Cheers, Mike

Michael Haaf

Open Access Article

First Insights into the Formation of Metal Soaps in Alkyd-Based Paints: A Proof-of-Concept Investigation Using FTIR Spectroscopy

by Tommaso Poli [1,*], Michael P. Haaf [2], Anna Piccirillo [3,*], Abby P. Costa [2], Rebecca L. Craig [2] and Federica Pozzi [3]

Our very own Becky Craig!!

IC Chemistry student!

Link to paper: https://www.mdpi.com/1420-3049/29/24/5840

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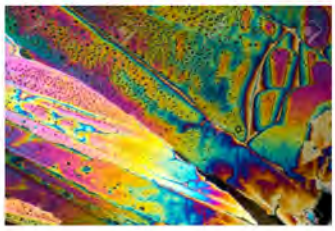
Course Spotlight:

CHEM-38103
(An Introduction to) Forensic Chemistry

Spring 2024 Advanced Elective

Simulated Crime Scene for Student Investigation



Nineteen students successfully completed our Forensic Chemistry block course during the 2024 spring semester. The class began with a simulated crime scene where students divided into teams intent on solving the "crime" over the course of this half-semester class. The class was taught in both laboratory and lecture formats providing representative examples of the work of a crime lab. We used a hands-on approach to analyze trace evidence, including glass, soil, fabrics, inks, drugs, and heavy metal poisons. Students gained a basic understanding of forensic science, especially the forensic chemistry subfield; the role of forensic chemistry in the laboratory; important instrumentation and chemical tests used by forensic chemists; and an understanding of the concepts and principles of chemical polarized light microscopy.

Many thanks to Lars Washburn and the Cornell Department of Chemistry & Chemical Biology for the loan of the Leica polarized light microscopes!

Janet Hunting

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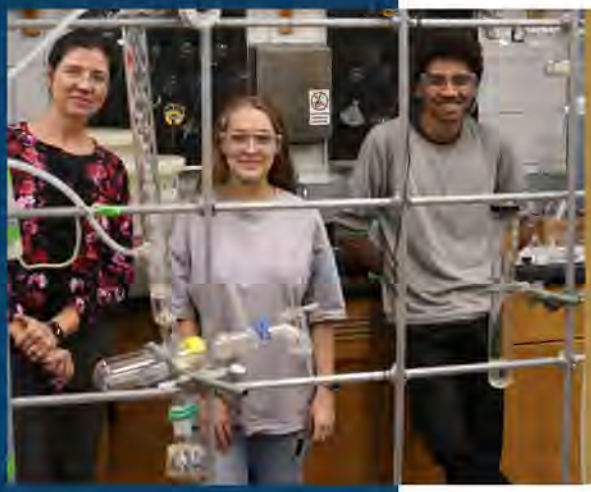
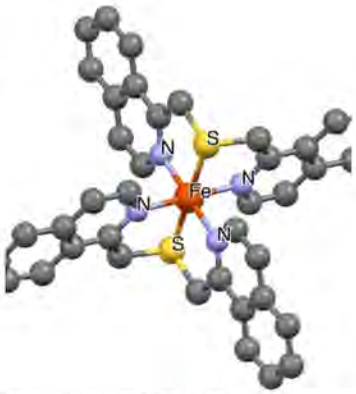


December '24 Update from Anna Larsen's Lab:

left to right Anna Larsen,
Mariia Grebenkina (Biochemistry '26),
Miles Wheaton (Chemistry '25)



We are continuing collaboration with Texas A&M University group of Oleg Ozerov in pincer complexes chemistry. Miles Wheaton (Chemistry '25)–has worked very hard on synthesizing tetra-dentate "PP3" ligand and finally was successful! As a Christmas present, we now have the first "PP3"-Rhodium complex X-ray structure solved. Miles will be presenting his work at the Spring '25 meeting in San Diego. Another member of our research group, Mariia Grebenkina (Biochemistry, '26), is continuing her work on the NNS-pincer complexes studies. Recently she isolated bis-BiQT complex of iron (pictured at right, which based on its structural characteristics, promises to have spin-crossover properties that will be confirmed by magnetic studies in the laboratory of our collaborator, Mike Shatruk (Florida State University). Maria presented a poster at the joint IC-Cornell research symposium in Spring 2024 and will be doing another presentation at the Spring '25 meeting in San Diego.
Both Mariia and Miles also completed summer '24 research internships at Florida State University and in University of Oregon, respectively.

The newest member of our laboratory, Kyler Lester (Chemistry '25) joined the group in Fall '24, to work on preparation of sodium and lithium nido-carborane salts as part of our ongoing collaboration with the Institute for Frontier Materials Research at Deakin University in Melbourne, Australia. We were able to ship Kyler's salt samples right before Christmas and are looking forward to the results of electrochemical studies with these compound performed on polymeric ionic liquid electrolyte batteries done in the Australian group of Dr. Mega Kar.

Anna Larsen has been serving as Councilor of the Local Cornell ACS section for the past 2 years. She is involved in various activities sponsored by ACS – such as joint Spring Ithaca College x Cornell undergraduate research chemistry symposia, summer chemistry picnics and other events, as well as in councilors sessions and Inorganic Division technical programming at the National ACS meetings.

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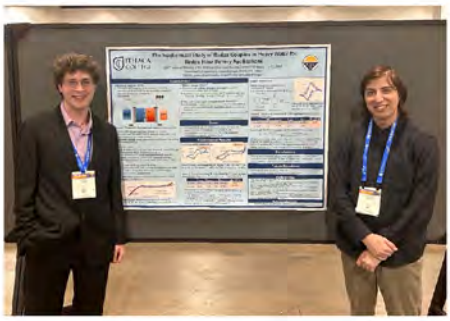
OTHER HIGHLIGHTS

2024 Sigma Xi

Emily Leach '24, Lily Goulding '24,
Lilly Johnson '25, Noah Strathmann '24,
Jake Perkins '24, Quinn Tufino '24,
Ariel Esteva '24

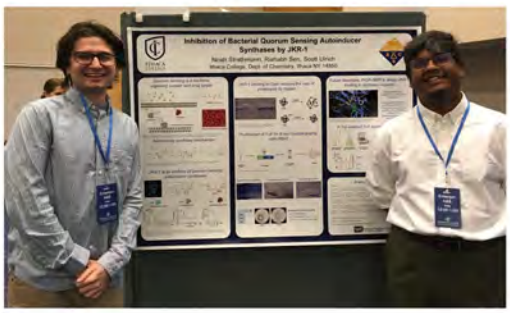
Daniel Larsen '24
ACS Presentation 2024 Denver, CO

Daniel Larsen '24,
Shane Galley '13



Daniel Larsen '24,
Max Bridges '23

The James J. Whalen Academic Symposium Award Winners 2024



Best of the School of Humanities and Sciences
"Investigating Autoinducer Synthase Binding With JKR-1, a Transition-State Analog Inhibitor"

Noah Strathmann
Biochemistry '24
Rishabh Sen
Chemistry '26

Faculty Sponsor: Scott Ulrich

Noah Strathmann '24
Rishabh Sen '26

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Top: Lilly Johnson, Mike Haaf, Rishabh Sen
Bottom: Abby Costa, Ella Carbray,
Lucia Moix, and Katya Kelly

MOLECULAR MOMENTS

2024 Spooky Science

Senior Celebration at the
Ithaca Beer brewery 2024

From top left: Janet Hunting, Andy Torelli, Lily Goulding, Alex Montgomery, Emmie Morgan, Emily Leach, Becky Craig, Ranjini Iyengar, LeAnn Sindt, Noah Strathmann
Bottom left: Chun Li, Birsen Gurkaynak, Ariel Esteva, Quinn Tufino, Olivia Waguespack

Stay connected!

Prof. Mike Haaf '94, Rishabh Sen '26,
Lilly Johnson '25, Abby Costa '25

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