

# Chemistry & Biochemistry Newsletter

JANUARY 2023

## Notes from the chair

Greetings chemistry friends!

Phew, it has been a minute since you've heard from us, but we are finally emerging from the fog of the pandemic that dominated all of our lives, and things are beginning to approach something resembling normalcy. I hope this newsletter finds you all happy and healthy. Despite the difficult challenges over the past two and a half years, life in the chemistry department continues to be exciting, and we are very happy to have the opportunity to share the latest news with you.

In this newsletter, you'll get to meet two of our newest faculty members. Dr. Daisy Rosas Vargas joined us in 2019. She specializes in organometallic chemistry and has particular interests in chemistry outreach. Check out this recent Ithacan article that highlights Dr. Rosas Vargas' guest appearance on "Chemists in the Kitchen", a popular YouTube show. <https://theithacan.org/life-culture/ic-chemist-uses-cooking-to-promote-diversity/>



Alt text: person in a green shirt with glasses holds up a pen drawing to the height of face.

Dr. Becky Craig joined the department in 2020 and specializes in physical and analytical chemistry. Her research centers on atmospheric chemistry, with a focus on aerosol formation and the fates of organic terpenes in the environment. It is gratifying to see so much student interest and excitement in Dr. Craig's courses and research! A huge welcome to both of these exceptional scientists! Please read on to learn more about them.

You'll also get to read about our faculty member's continued success in winning grants to fund their research. This year, we are particularly excited to announce a \$250,000 NSF grant to acquire new NMR instrumentation! <https://theithacan.org/news/ic-chemistry-department-gets-250000-grant-for-equipment/>

We are thrilled to announce that Ithaca College was one of seven colleges to receive The Jean Dreyfus Lectureship award! This grant provides funding to bring a leading researcher to campus, and we are delighted that we will be welcoming Professor Stanley Whittingham, a 2019 Nobel Laureate for his impactful work on lithium-ion batteries, from Binghamton University. Professor Whittingham will be spending 2 full days at Ithaca College, interacting with our students and faculty, and he will be giving a talk for the general public on Saturday, October 21, 2023. Please save the date if you want to attend! A portion of this grant will also be used to support two Ithaca College undergraduates in summer research. A special kudos to Ithaca College Professor Akiko Fillinger, for doing the heavy lifting on the grant award proposal!

**Mark your calendars!!** We are excited to announce a very special 60th Anniversary of the Chemistry Department later this year, during the **2023 Alumni Weekend!** We'd love to see as many chemistry and biochemistry alumni here as possible, so I hope you'll think about returning to Ithaca College this fall! Details will be forthcoming!

Finally, a huge thank you to all of those who have made contributions to our department. We continue to receive generous support from alumni, current students, parents, and even current and former faculty members! These donations help us to send students to conferences and to fund student research projects over the summer, among many other critical things, and we are all very grateful for your past and future generosity.

We sent 7 students to the recent ACS meeting in San Diego. As always, these students returned from this singular experience with enthusiasm, gratitude, and a genuine sense that they were part of the greater chemistry community.

Please visit our web-site at <https://departments.ithaca.edu/chemistry/> for updates on chemistry department news.

You can also follow us on Instagram for regular updates and photos: <https://www.instagram.com/icchemistry/>

The Periodic Table of the Elements

As always, we love to hear from our former graduates! Please drop us a line (call, write, or e-mail) and let us know what you're up to. In the meantime, all the best to you and your families.



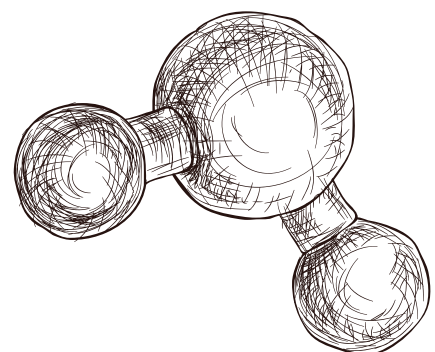
Alt text: Five faces within 4 boxes on a computer screen. From left to right: Two people, one in black shirt, one in plaid shirt, one person with glasses holding up camera to screen, one person with black shirt, and one person with blue shirt near green bowl and small child in background.

I had a lovely zoom chat with some former research students recently. Samantha Schrell (Cary), Yuta, and Kaylee are all PhDs or MDs now, and they are all parent too! How time flies! Samantha was recently recognized with the 2022 Ithaca College Outstanding Young Alumni Award!! Congratulations, Sam!! And yes, they made fun of me for using my phone to take this picture and for not knowing how to take a screen shot.



Alt text: Four people standing together to take a picture. From left to right: A person wearing sunglasses, blue sweatshirt and shorts, holding a yellow water bottle. Person with glasses, red t-shirt, and shorts. Person with black tank top and green pants. Person with red sweatshirt and shorts.

Spencer Procopio, me, Karolina Baranowski, and Josh Bodin.





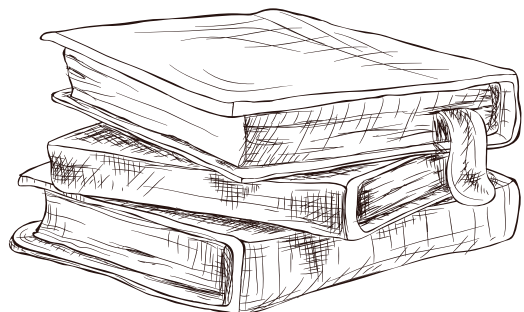
It is with a heavy heart that I share the sad news of Jim MacNeil's passing. A deeply valued colleague, teacher, and friend, we will of course remember Jim for his exceptional technical work and problem-solving skills in science, but we remember Jim first and foremost for his genuine kindness and comradery.

I have the fondest memories of Jim, from when I was a student at IC and later when I became a faculty member. He was always such a steady and calming presence, particularly as students stressed and floundered over instrumentation during our lab courses. He would walk in, smile and say "problems?" Then he would push a couple of buttons, and all was right with the world (as long as you didn't call the instruments "machines"! ). He always invited me to play basketball at lunchtimes with him or play on his team for an IC golf outing (even though I can't really golf), and I enjoyed getting to know him and Judy over the years. His friendliness and positivity was contagious to both students and faculty and he will be sorely missed.



To learn more about Jim's extraordinary life, please visit the link below.

<https://www.tributearchive.com/obituaries/27093994/james-macneil/dryden/new-york/perkins-funeral-home>



# New Colleagues in the Hall



Hello IC chemistry community! I am Becky Craig, the new resident physical chemist in the department. I earned my PhD in Chemistry from the University of Michigan in 2018 and then joined the IC Chemistry department in 2020 after a two-year tenure as a visiting assistant professor at my undergraduate alma mater, the College of Wooster (Wooster, OH). Like many of us who faced unexpected challenges during the pandemic, I did not anticipate teaching classes remotely from my dining room for my first semester at IC. So I adopted a chemistry-themed mantra of “Think like a proton and be positive!” and did my best to introduce our students to the wonders of physical chemistry, sometimes through unconventional means (do you know how many songs from the 80s are related to thermodynamics??). I am very grateful for the warm welcome and help offered by my Chemistry department colleagues during my first few semesters.

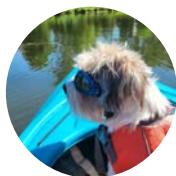


Alt text: Person smiling in front of tan wall.



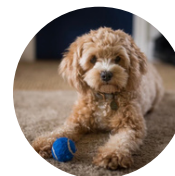
Alt text: Person smiling in hallway.

Hi everyone! I am Daisy Rosas Vargas. I grew up from Southern California and received my chemistry BS from University of California, San Diego. During a gap year, I worked as a medicinal chemistry intern at GNF (Genomics Institute of the Novartis Research Foundation) in San Diego. I went on to earn my PhD from Indiana University and began science outreach at the local science museum. My main interests include organometallic chemistry and science education and communication. I started my time at IC in the Fall 2019, pre-pandemic. Through the in-person, online, and hybrid semesters, I have taught Organic I, Organic labs, principles labs, and an Advanced Elective. Since arriving in Ithaca, I have joined the board of trustees at the Sciencenter, became a science educator volunteer at Museum of the Earth, and has been featured on the National Academy of Sciences LabXNAS YouTube channel, “Chemists in the Kitchen”.



Alt text: Dog with blue sunglasses and orange vest sitting in kayak.

## De-paw-ment Assistants



Alt text: Dog with blue ball lying down on brown carpet.

Danny is from Indiana and has a masters in Dog Science from Indiana University, Bloomington. He moved to Ithaca in Fall 2019. He was getting to know the students and campus when the pandemic hit in Spring 2020. He is one of the few who enjoyed the pandemic time at home, but he missed interacting with the students. He is currently back on campus, greeting the faculty in their offices and the students in the atrium.



Wish arrived in Ithaca in spring 2020 just before the pandemic and quickly discovered how to make cameo appearances on Zoom during classes. She has opted to audit two chemistry classes on Fridays this semester and enjoys checking on students and faculty to say hello in her spare time. Wish’s favorite hobby while visiting is playing ball in the hall with anyone willing to join in.

# Akiko Fillinger's Lab Update

The most recent graduate from my research group is “Professor Matt Sullivan” of the Astronomy and Physics Department of Ithaca College. Matt’s long journey to a BS in chemistry started ten years ago. Some of you had him as “a peer” in the same classroom or lab, instead of as an instructor. Matt completed his senior thesis “Green Energy Future: Electrolysis of Water via Cu O and ZnO heterojunction films” in May 2022. Using pulsed laser deposition (PLD) technique, Matt deposited ZnO film on electrodeposited Cu O film, and he characterized the heterojunction film. His work proved that ZnO can be deposited via PLD on top of Cu O, which was impossible electrochemically due to the instability of Cu O in the potential range required for ZnO deposition. The photos below were shared by Matt in the end of his senior research presentation. The baby in the top photo is the youngest kid in the bottom photo.

Congratulations, Matt!



Alt text: A person with black shirt and jeans, holding a small infant. Person with green striped shirt and jeans also holding the small infant.



Alt text: Five people standing in front of green hills. Left to right: person with blue shirt holds a brown and white dog. Child with grey shirt holds dog. Child with blue shirt next to child with red shirt, holding light yellow dog. Person with red shirt and glasses holding child with red shirt.

A year prior to Matt’s acquisition of a chemistry degree, Andrew Nicoll (Chemistry '21) successfully completed his honors thesis, “Hydrogen Peroxide Generation at a  $\text{Cu}_2\text{O}$  Photocathode” in May 2021. Andrew’s research was interrupted by the COVID pandemic for the entire 2020 academic year. He kept his passion for the research alive by working from home on his honors thesis. I am hoping that we can put together Andrew’s and another Andrew’s (Andy McCabe, Chemistry '20 – currently at the University of Minnesota) work on this research project for a manuscript in very near future. Currently, Andrew Nicoll is at Stony Brook University and is investigating Zn-ion rechargeable batteries to replace scarce Li-ion.

After investigating  $\text{Cu}_2\text{O}$  for hydrogen generation as a method to store solar energy for almost 20 years, our research group has expanded its interest to batteries – more specifically redox flow batteries (RFBs) as a storage method for excess electricity generated by sunlight and wind. This semester Max Bridges (Chemistry '23) started to investigate glassy carbon electrodes for aqueous RFBs applications, which are required to not generate  $\text{H}_2$ ! This is totally opposite to what we have been researching with  $\text{Cu}_2\text{O}$ ! Max submitted his abstract to ACS National Meeting at Indianapolis, IN in March 2023.

# Anna Larsen's Lab Update

Greetings from Anna Larsen's Lab. Here is a quick recap the events in and around the lab since our last newsletter came out. Anna has spent a sabbatical semester in Fall of 2018 as a Visiting International Scholar in the Institute for Frontier Materials Research at Deakin University in Melbourne, Australia. Upon return, we had completed our work on Rhodium Pincer complexes project with Rain Talosig, who graduated with Honors in Chemistry Research in May 2019 (the paper with Rain's results has finally come out in Dalton Transactions this fall, coauthored by our TAMU collaborators from the laboratory of Oleg Ozerov). Next, Rain joined the chemistry PhD program in University of California-Irvine and is currently involved in exciting research in bioinorganic materials chemistry in Patterson's group.

Melissa Raymond, our other lab alumna, has graduated with honors in chemistry research awarded for her thesis on carborane low melting salts studies, and is currently completing a PhD degree in University of Houston College of Pharmacy. We are very proud of both of you, Melissa, and Rain!!

In January 2020, two (then) sophomores, Alex Rono and Ten Sherpa (both '23) have joined our laboratory, right before the COVID struck. We have survived it by working online, returned to the lab in earnest in Spring of 2021 and are now pushing forward with Iridium pincer complex chemistry. Ten has done a 5-week internship this past summer in Oleg Ozerov's lab in Texas A&M, figuring out the N-heterocyclic CH activation reactions of iridium hydride complexes by NMR methods. Cesar Morocho ('22) joined our laboratory in spring of 2020 and did an online summer research internship (during COVID), contributing greatly to the structure database investigation as part of a joint review paper prepared with our collaborators Mike Shatruk and his students in Florida State University. Cesar graduated in May '22 and is currently applying for MD programs. We are rooting for you, Cesar!



Alt text: Five people standing in a laboratory. Left to right: Person with safety glasses and light pink sweatshirt, person with safety glasses and brown sweater, person with white blouse and vest, person with safety glasses and green jacket, person kneeling down with safety glasses and grey sweatshirt.

Miles Wheaton ('25) joined our laboratory in Spring of 2021, and so far has grown many cool crystals of Mn, Co and Fe pyridine halide chain compounds, getting really proficient at fishing for the best ones for X-ray crystallography, collecting, and solving the structures (with a bit of help from Dr. Chun Li). We are looking at these materials for potential magnetic activity to be further studied in Mike Shatruk's lab in Florida. Ten and Alex traveled to present their Ir pincer studies at the at the National ACS meeting in San Diego in March of 2022. Immediately after they (along with Cesar) participated in the undergraduate research symposium held at Cornell University where their poster won an award (sponsored by the local Cornell ACS section). See the photo taken in our laboratory in May of 2022, left to right: Cesar Morocho ('22, HSHP, Chemistry minor), Miles Wheaton ('25), Anna Larsen, Alex Rono ('23), Tenjing Sherpa ('23).



Alt text: Two jars next to each other. Top jar with shiny green powder. Bottom jar with dark purple powder.

Anna has been teaching Inorganic, Principles, Organometallics, and Organic lectures and labs. Last fall we introduced several new experiments for the reorganized Inorganic Chemistry lab class Chem 343. We have quite a bit less time per week for it than we used to in Experimental Chemistry 4, but there are still cool experiments to be done (see the photo of two crystalline polyiodide tetra-alkyl ammonium salt samples—purple triiodide and green pentaiodide one-synthesized by the students in Chem 343 in Fall 2021). Also, as of March 2022 Anna started serving as a Councilor for the Cornell section of the American Chemical society here in Tompkins County. The section is back to life and active again.

# Becky Craig's Lab Update

My research interests lie in the field of atmospheric chemistry, specifically the chemical properties and reactive behavior of atmospheric aerosol particles. I have been fortunate to be able to work with several excellent research students over the past couple years. Alex Babcock (Chemistry, Dec. '21) helped me set up our lab's new Raman spectrometer and microscope, and then worked on developing spectroscopic methods for detection and identification of harmful algal bloom toxins in Cayuga Lake water and lake spray aerosol particles. This project involved a few field trips to collect water samples from various locations around the lake throughout the summer and into the fall during bloom season!



Alt text: Large body of water with hillsides on each side.



Alt text: Person with white baseball cap and blue shirt holding sample while standing on rocks, overlooking body of water



Alt text: Rocky shore with view overlooking body of water.

A few shots of our water sampling locations, and Alex collecting a sample.

Bella Pillay (Chemistry '22) studied ion activity and pKa shifting of the bioxalate-oxalate acid-base equilibrium system, an important pair of chemical species that can be used to determine pH of aerosol particles.



Alt text: Two people sitting on a table.



Alt text: Three people standing in a laboratory. From left to right: person with blue lab coat and safety glasses, person with purple shirt, person with safety glasses and blue lab coat.

Summer 2022 brought Lilly Johnson (Chemistry '25) and Eirene Omoniye (Biochemistry '25) to the Craig lab. Similar to Bella's project, Eirene's research was a study of ion activity and pK<sub>a</sub> shifting, but for the bisulfite-sulfate acid-base equilibrium system. Lilly focused on the synthesis of atmospherically relevant organic compounds, including beta pinene oxide and limonene oxide for atmospheric lifetime (kinetics) studies, and is continuing this work during the 22-23 academic year.

Nat Risheg (Chemistry '23) has been a member of the lab since summer 2021 and is now working the final piece of his project – characterization of the kinetics of alpha pinene oxide hydrolysis over a range of pH conditions. Nat will present his research at the ACS National Meeting in Indianapolis, IN in March 2023.

# Congratulations

## Class 2022



Alt text: Fifteen people standing in front of wall wearing blue graduation gowns and caps with white sleeves.

Ellie J. Acquilano Biochemistry, BS  
 Lindsey A. Albertelli Biochemistry, BS  
 Karolina Baranowski Biochemistry, BS  
 Maria L. Baughn Biochemistry, BS  
 Josh Bodin Chemistry, BS  
 Eric Choi Biochemistry, BS  
 Patrycja B. Danowska Chemistry, BA  
 George A. DuCasse Biochemistry, BS



Alt text: Two people standing in front of wall wearing blue graduation gowns and caps with white sleeves.



Alt text: Right photo: two people standing in front of wall wearing blue graduation gowns and caps with white sleeves. Left(middle) photo: a person with white dress and blue graduation cap writing on a poster. Left (bottom) photo: four people standing in front of wall with dress and graduation gowns and caps.

Nya D. Evans Chemistry, BS  
 Olivia Grogan Chemistry, BS  
 Annina K. Hoffman Biochemistry, BS  
 Abigail P. McGee Biochemistry, BS  
 Isabella S. Pillay Chemistry, BA  
 Paige J. Ramkissoon Biochemistry, BS  
 Elizabeth M. Ryan Biochemistry, BS  
 Katelyn E. Sarkovics Biochemistry, BS  
 Matthew C. Sullivan Chemistry, BS

Alt text: Right photo: two people standing in front of wall wearing blue graduation gowns and caps with white sleeves. Left(middle) photo: a person with white dress and blue graduation cap writing on a poster. Left (bottom) photo: four people standing in front of wall with dress and graduation gowns and caps.



# Chemistry & Biochemistry Student Scholarships & Awards

## Roger Harris '80 Scholarship

Maxwell Bridges '23

## Bill and Donna Bergmark Chemistry Scholar

Lily Goulding '24

Talia Morris '23

## Russell Drago Chemistry Award

Tenjing Sherpa '23

Maxwell Bridges '23

## Chemistry Book Award

Emily Leach '24

## Glen Vogel and Marjorie Chelley Chemistry Education Fund Award

Nya Evans '22

## First Year Chemistry Award

Lilly Johnson '25

Ranjini Iyengar '25

Ginny Illingworth '25

# Chemical Happenings

## Chem Club @ Spooky Science 2022



Alt text: Eight people wearing various costumes in front of table with chemical equipment

## Senior Week Celebration 2021



Alt text: Fourteen people standing in front of table umbrellas and a outdoor wall.

## Chem Club builds air purifiers 2021



Alt text: Two students with masks pointing at a white air filter apparatus. Several students in the background also working on another filter.

## Fall Welcome Picnic 2022



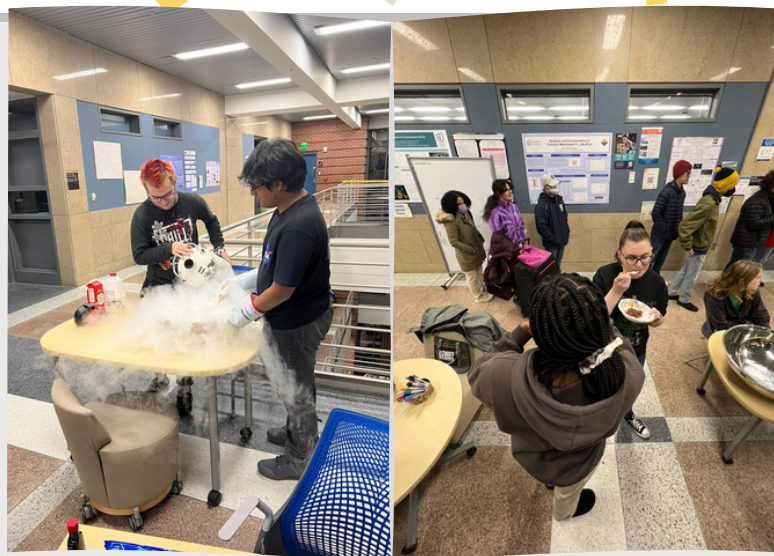
Alt text: Eleven people and a dog standing in front of a green forest.

## Halloween 2022



Alt text: One person with blue cloud dress and one person with brown wig, painting and paint pallet standing in the hallway

## Chem Club Ice Cream Social 2022



Alt text: Left: Student pours liquid nitrogen, creates 'smoke', as other student stirs a silver bowl. Right: Several people standing in the hallway in front of colorful posters.

## Chem Club and Indigenous Scientists Poster



Alt text: Left: Five students stand in front of poster in front of blue wall.

## Alumni Invited Speaker 2022



Alt text: Right: A person poses in front of a screen projector and black board.



# UPCOMING EVENTS

**February 2023:** Chemistry Research Social

**March 2023:** American Chemical Society  
@ Indianapolis, IN

**May 2023:** Spring Commencement!



**October 19-21st 2023:** Chemistry Nobel Laureate

Professor Stanley Whittingham will visit.

If you would like to attend please email  
[chemistry@ithaca.edu](mailto:chemistry@ithaca.edu)

**October 27-29th 2023:** IC Chemistry department

60th Anniversary Celebration (IC<sub>60</sub>) and Alumni Weekend

Registration information will become available this summer.

<https://alumni.ithaca.edu/pages/alumniweekend/alumniweekend2023>

We love having chemistry alumni  
visit for talks!

Interested? Please email  
[chemistry@ithaca.edu](mailto:chemistry@ithaca.edu)





Left to right: Mike Haaf ('94), Becky Craig, Chun Li, Janet Hunting, Akiko Fillinger, Scott Ulrich, DJ Robinson, Daisy Rosas Vargas, Andy Torelli, Anna Larsen, missing: Paula Larsen  
Alt text: Ten people, faculty and staff, standing in hallway near a metal balcony.

We are excited to bring back our newsletter after a long hiatus! We have gone through a couple of changes the last few years, with new faculty hires and staff changes. The chemistry department would love to reconnect and hear from you. If you want to visit or reconnect with the Chemistry department, or interested in becoming a speaker, please email [chemistry@ithaca.edu](mailto:chemistry@ithaca.edu).

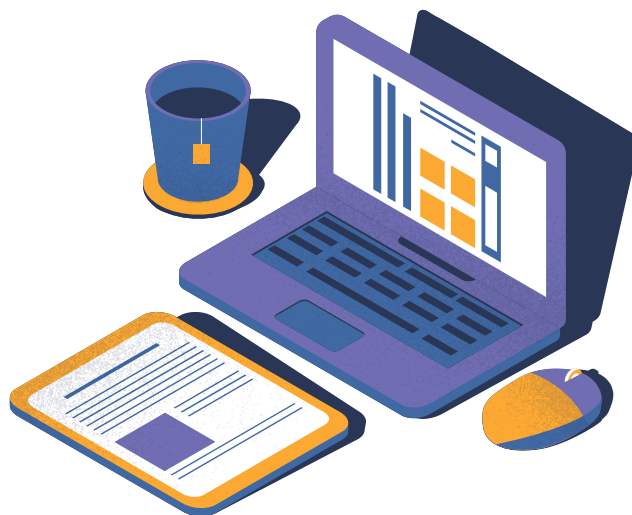
Check out our QR codes for department info!



What Do Our Alumni Do?



Learn By Doing



**Newsletter Credit:**

Newsletter editors: Paula Larsen and Daisy Rosas Vargas

Photos taken by: Becky Craig, Akiko Fillinger, Mike Haaf ('94), Anna Larsen, Chun Li, Daisy Rosas Vargas, Noah Strathmann ('24), Andy Torelli, Jake Voudren ('24)

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