

News from Chemistry

Since our last newsletter in 2022, we've seen more changes and more challenges. With the pandemic behind us classes have returned to in-person and most everyone has stopped wearing masks. Our enrollments have been low which resulting in smaller classes and more one-on-one interaction. Faculty have active research programs and students have presented at SPACE our campus Research Symposium and the ACS Student Affiliates Symposium at Duquesne. We bid farewell to two retired former faculty in the past two years, Dr. Joe Carney and Dr. Sheldon Clare.

Thanks to your generous donations the Chemistry Department Instrumentation Fund has been growing and we've been able to update more instrumentation. Read on for an update from the Department.

DEPARTMENT USES GIFT FUNDS TO PURCHASE AN HPLC

The University of Pittsburgh at Johnstown's Chemistry Department received funding from the Spectroscopy Society of Pittsburgh's College Equipment Grant to help purchase a refurbished **High Performance Liquid Chromatograph (HPLC)**. In addition to the grant, the department used matching funds from the Chemistry Department Gift Fund. This purchase would not have been possible without the generous donations from our alumni.

The Agilent 1100 series HPLC with a binary pump and diode array detector will be used across the upper level courses to separate, identify, and quantitate the chemical composition of unknown mixtures. The courses include Instrumental Analysis lab, Physical Chemistry lab, and various Independent Research Projects. Students will now gain hands-on experience using one of the most common

instruments in industry, making them highly competitive when seeking employment.



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CHEMISTRY DEPARTMENT ALUMNI SEMINAR SERIES

Alumni Return and Share their Experiences

This year the Chemistry Department initiated a new alumni seminar series. Organized by Dr. Marsha Grimminger, each seminar featured several short presentations from recent graduates as well as alumni who've been in the work world for some time. The first seminar of the series was held the Friday of the Natural Sciences Reunion Weekend, October 20. We hear from four speakers: Lindsey McDivitt (2019), Megan Kostan (2019), Brooke Ashleigh (2006), and Dr. Tony Cortese (2010). Speakers discussed how Pitt-Johnstown helped them along their career paths and offered advice on entry into industry, education and the medical field. Several speakers offered unique insight into what happens when your first plan does not succeed.

The second seminar featured Dr. Jordan Noble (2016) and Dr. TJ

Rohrbaugh (2013). The third seminar featured Dr. Justina Burns (2003) and Yang "Mike" Chen (2021). The final seminar featured Dr. Robert Hondal (1991), Dr. Cara Lang (2017), Jake Shaffer (2018), and Brittney Garcia.

While many of our speakers made the trip to Johnstown to visit campus and see the new facilities, others joined us over Zoom for the afternoon.

The seminar series was well received by both faculty and students. The students appreciated the advice—especially how to turn things around when the first plan doesn't work out. We hope that it will become an annual event. If you would like to come back to campus to visit or Zoom in for the afternoon to share your experiences, we'd love to hear from you. Contact Dr. Marsha Grimminger at mag246@pitt.edu.

Help us Update our Database and join our Seminar Speaker Series

We'd love to know what you are doing. We invite you to give back and share your experiences with our current students through our seminar program.

Contact Dr. Ryan Bird, Department Chair at rbird@pitt.edu

GREENING THE CHEMISTRY CURRICULUM

In the last ten to fifteen years the organic chemistry lab has changed ... to green. Dr. Nigam, Dr. Tracey, and Sam Martinus (who retired in 2020) have engaged in a collaborative effort, resulting in the development of three environmentally friendly experiments that have been seamlessly integrated into our organic chemistry laboratory curriculum. The experiments began as research projects carried out by students working with Dr. Nigam and Dr. Tracey and Sam. The students have actively participated as co-authors in the publications stemming from these experiments thus contributing to the academic discourse in the field.

Though the projects started as research projects, the impact extends

beyond the research realm, reaching students in our teaching labs. Here, students engage in the assessment and analysis of green chemistry metrics associated with these experiments. This immersive experience not only enhances their practical understanding of green chemistry principles but also underscores the importance of incorporating sustainable practices into our curriculum.

All the experiments have been published. Sample experiments incorporated are:

“A Solventless Carbonyl Addition Reaction as a Guided Inquiry Laboratory Activity for Second-Year Undergraduate Organic Students” Tracey, M.P.; Nigam, M.; Pirzada,

E.; Osman, T., manuscript accepted for publication (pending edits) in *Green Chemistry Letters and Reviews*.

“Putting the Squeeze on Imine Synthesis: Citrus Juice as a Reaction Medium in the Introductory Organic Laboratory”, Nigam, M.; Tuttle, D.; Morra, B.; Dicks, A.; Rodriguez, J. *Green Chemistry Letters and Reviews*, **2023**, *16*, 1.

“Synthesis of substituted N-phenylmaleimides and use in a Diels-Alder reaction: A green multi-step synthesis for an undergraduate organic chemistry laboratory” Bastin, L.; Nigam, M.; Martinus, S.; Maloney, J.; Benyack, L.; Gainer, B. *Green Chemistry Letters and Reviews*, **2019**, *12*, 127–135.

NATURAL TICK REPELLENT

Most people enjoy spending time outside, but while outside, they run the risk of contacting Lyme disease. Currently, DEET is the recommended repellent. However, there are significant side-effects leading to a search for natural repellents for blood-sucking parasites.

Dr. Manisha Nigam and Dr. Mathew Tracey in the Chemistry Department are collaborating with Dr. Jill Henning and Dr. Luis Bonachea from Biology to develop a green alternative to DEET derived

from naturally-occurring carbon binding compounds.

Ticks seek out their hosts via carbon dioxide detection. Sensors on their forelegs are used to follow the carbon dioxide concentration gradient to their host. Hemoglobin, myoglobin, and hemocyanin are natural carbon dioxide-binding agents found in humans and crustaceans. The biophysical properties of these naturally occurring compounds are optimal for binding CO₂ in their respective species. This project

aims to determine if these compounds, when dissolved into organic solvents like, glycerol and water, petroleum jelly, aloe vera, and others and applied to the skin will act as repellents. The team has been funded for the project “B.I.T.E: Binding to Increase Tick Evasion” through a Pitt Innovation Challenge 2023 grant (\$115,000).

PinCh is a University program designed to support diverse teams who generate innovative solutions to challenging health problems. [Learn more](#)

[Watch the PinCh presentation](#)



NEWS FROM THE PITT-JOHNSTOWN CHEM SOCIETY

National Chemistry Week Health + Medicine

Our Pitt-Johnstown Chem Society continues to be very active. As part of National Chemistry Week, the Chemical Society presented 6 hands-on activities to students in grades K-6 at the Richland Elementary School on Thursday, October 19. Following the NW theme of Health + Medicine, students learned about the chemical reactions in hot and cold compresses and how antacids neutralize stomach acid. They made their own Band-Aids, extracted DNA from strawberries, and learned which gas laws govern breathing.

Eleven Pitt-Johnstown students and four faculty volunteers presented activities. We had approximately 40 students at the event.

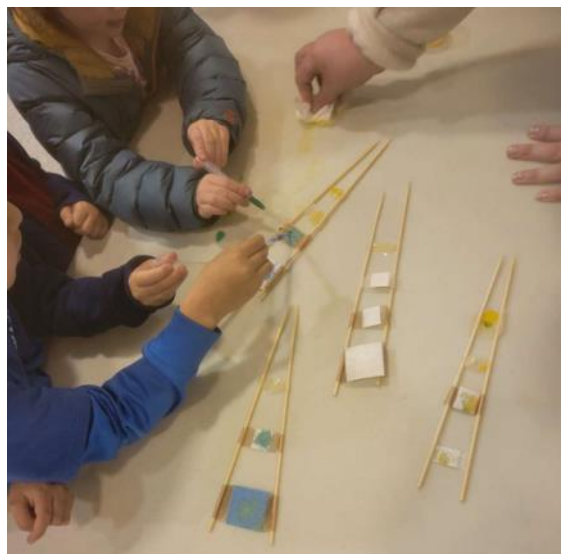
Faculty who assisted included Dr. Marsha Grimminger, Dr. Laura Ritchey, Mrs. Tracey Fisanick, Dr. Matt Tracey.

The Chem Society had several social activities in the fall: s'mores at the fire pits and pumpkin carving contest in October, and a movie night in December.

They have several activities planned for the spring as well.



Students and faculty who presented at Richland Elementary School



MORE HIGHLIGHTS FROM NATIONAL CHEMISTRY WEEK



IN MEMORIAM

Dr. Joseph Carney passed away in December of 2022. He began teaching at Pitt-Johnstown about the time that the Engineering and Science building was completed. He taught General Chemistry (he preferred Chem 2 to Chem 1), Analytical Chemistry and Instrumental Analysis. He mentored many students doing undergraduate research. He and his students would collect water samples from strip mine ponds and analyze them for heavy metals and other inorganics using AA and other spectroscopic techniques

Alumni shared their remembrances citing what a wonderful professor he was, how much they had learned recalling the very long Instrumental Analysis labs. When an instrument wasn't working, Joe was the "go-to" person to call. He would drop whatever he was doing to help a student or colleague.

He was Department Chair his last year and retired in Spring 2007. In 2009 the Department needed someone to teach Analytical and Instrumental. Having exhausted all possibilities, the Department Chair called Dr. Carney to ask for advice. "You wouldn't by chance be interested," she asked. He paused and said "I'll have to ask my wife." He called back about 10 minutes later and said,

"I'll do it." He had a real servant heart and will be fondly remembered by those who worked with him.

More recently we learned of the passing of **Dr. Sheldon Clare** in early February. Dr. Clare earned his bachelor's degree in chemistry from New York University and went to Pitt for a masters. He was offered a job at Pitt-Johnstown when the campus was located in Moxham. He taught General Chemistry and Organic Chemistry when the campus moved to Richland and the Chemistry Department was located in Krebs Hall. In 1968, he and his family moved to Tucson, Arizona where he earned his doctorate in polymer chemistry at the University of Arizona. He came back to UPJ and continued teaching. He developed a course in Polymer Chemistry and taught Gen Chem I, the two-semester Organic sequence and Fundamentals of Organic.

Dr. Clare retired in 1999 and moved to Tucson where he taught as an adjunct at the University of Arizona and also part-time at Pima Community College. He came to Johnstown to visit family and would stop by campus. The last time he visited the Department had relocated to the renovated space in Engineering and Science. He was a little lost, but very impressed.

PITT DAY OF GIVING 2024: 2-27-2024 – CONTRIBUTE TO THE CHEMISTRY FUND

Since 2018 we have raised over **\$15,000 for the Chemistry Department Gift Funds**

This year we hope to raise at least \$5,000 for the Chemistry Department Fund. Your donations will serve as matching funds toward the purchase of a microwave for the Green Chemistry research.

Pitt has two school and college challenges. One is for the school that surpasses their total number of unique donors from Pitt Day of Giving 2023. The other is for the school, college, or campus that reaches their predetermined PDoG24 donor goal.

Every dollar you contribute goes to the Chemistry Fund. Go to the following link:

<https://pittdayofgiving.com/pages/pitt-day-of-giving>

Select the **DONATE** button at the far right

- Select Pitt—Johnstown as your category
- Select "UPJ Chemistry Fund"
- Enter the amount and click **CONTINUE**

The winnings will be distributed to all units that "Raise the Bar" or "Level Up".

So, we are hoping that you will help. It's not about how much you give (though that always helps), but how many donors contribute. If spouses and partners split their combined gift – giving two smaller gifts – that would get us twice the number of unique donors!

