Grove City College
Chemistry eNewsLetter
Fall 2018 review

Departmental News

From Dr. Joe Augspurger, Chair

Several "firsts" have or will be occurring this year (fall 2018-2019 as I write this) in the Grove City College Chemistry Department. Dr. Tim Homan is the first chemistry faculty member to be awarded a sabbatical leave. He and his wife Kristin (faculty member in Psychology) have been in Madison, Wisconsin, learning medicinal chemistry. We look forward to him returning in the Spring to begin applying his research.

Second, for the first time in the history of the department, a faculty member will be having a child! Not just one, but both Dr. Wong and Dr. Guevara are expecting, January 12 and April 24, respectively. Everyone is pitching in to cover their classes, along with the adjunct who served us so well two years ago, Dr. Mary Sisak (retired faculty from Slippery Rock).

For the first time, I will be teaching a chemical engineering course. The former Dean of the Hopeman School, Dr. Stacy Birmingham, lead the creation of a chemical engineering minor two years ago (two of this year's senior chemistry majors plan to complete it). The core of the minor is three chemical engineering courses, that Dr. Birmingham was teaching. Since she left this summer, I was asked to take on the third course, ENGR 420, Chemical Reaction Engineering. I did major in chemical engineering at the University of Illinois as an undergraduate, but I took this course in 1980 and have not used it since. I'm in the process of reteaching myself the material.

A lot of change is coming in the leadership on campus. Not only did Dean Birmingham leave since last year, but so did our Provost, Dr. Robert Graham, who was named President of Redeemer University near Hamilton, Canada. Searches have commenced for both Positions. Dr. David Ayers, the Dean of the Calderwood School, has been appointed Interim Provost, and Assistant Dean Dr. Tim Mohr appointed Interim Dean.

We've been working to improve the content and appearance of our web page (www.gcc.edu/chemistry). We've worked with the staff in Communications to create a new department overview video as well as a new video highlighting our research and the benefits of research. We're working to improve the description of our many research projects, to make them more understandable for high school students – they are a key audience with which to connect.

Two of our senior biochemistry majors, Sam Henson and Ethan Conto, helped to anchor the defense of our football team. As starting linebackers, they were part of the team's great season, their second best record in 50 years.

As my first year as department chair comes to an end, I have learned that there is no end to the details that have to be addressed to keep the department functioning. While it can be overwhelming, it's a privilege to continue to train each new generation of students who will join the outstanding alumni who give our department its wonderful reputation.

Faculty Spotlight

Dr. Pazehoski ’01

The tradition of teaching excellence at Grove City College lives on. Beginning in the year 2000, GCC has awarded the Omicron Delta Kappa (ODK) Professor of the Year award to one of its faculty members. Since the inception of the award, faculty in the Chemistry department have received this honor three times: Dr. Tim Homan (2002), Dr. David Jones (2008) and Dr. Charles Kriley ’88 (2016). Last year our department was honored once again with one of our graduates, Dr. Kristina (Odonish ’01) Pazehoski (Biochemistry) winning Professor of the Year. Dr. Pazehoski is currently serving as interim Assistant Dean for the Hopeman School of Science, Engineering, Mathematics, and Computer Systems and is a professor in the Biology department.

Dr. Pazehoski earned her bachelor’s degree in Biochemistry at Grove City College. While a student, she participated in research under the direction of Dr. Jones, and Dr. Kriley was her academic advisor. After graduating from GCC in 2001, Dr. Pazehoski earned her Ph.D. in Biochemistry from Duquesne University. She went on to teach at the University of Pittsburgh at Greensburg from 2006 to 2011 before coming back to Grove City College to teach in the Biology department. Dr. Pazehoski has since been promoted to full Professor and has served as the Chair of the Biology Department.

Dr. Pazehoski has expressed how her time at Grove City College as an undergrad prepared her for graduate school and beyond. Her professors helped her become confident as a Christian and a scientist. “My professors at GCC never shied away from discussing concepts that are often perceived as difficult for someone with faith to reconcile as they pursue a career in science. They presented these discussions with respect and humility, providing a great example for how to engage these ideas with others out in the real world.” Pazehoski also expressed her gratitude for the great honor of receiving the ODK award and for God leading her back to GCC to serve students at her alma mater.

Dr. Pazehoski met her husband Bob ’01 at Grove City College at a square dance in their freshman year and they now have five children. The Pazehoski family values their relationships with students in and out of the classroom and opens their home often to college students and faculty. In the spring semesters, students have an open invitation on Friday nights to have dinner at the Pazehoski house. Dr. Pazehoski is also involved with a Campus Ministries women’s discipleship group, where she serves as a facilitator. She seeks to be available to students who are navigating the many challenging transitions of college life in both academic and personal growth avenues.

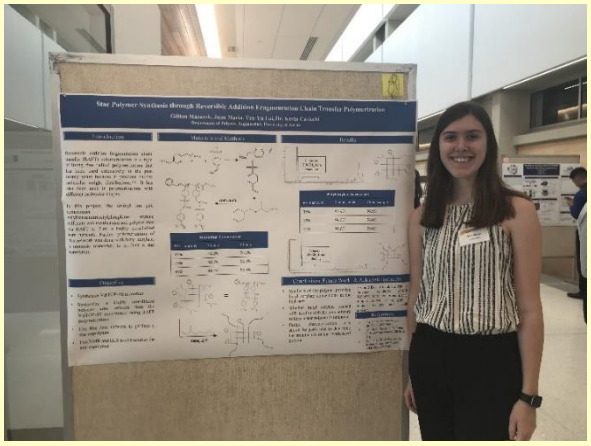
President McNulty presenting Dr. Pazehoski ’01 with the ODK Professor of the Year Award in Spring 2018.

Student Summer Research

Many of our students had great opportunities to work in industry or carry out research in academia in the summer of 2018.

Phil Gaines (BIOC, ’20) worked for the animal health pharmaceutical company Elanco researching insulin activity in feline diabetes using cell culture and a number of bioassays.

Gillian Mazurek (CHEM, ’20) synthesized star polymers using RAFT (reversible addition fragmentation chain transfer) polymerization at the University of Akron in an REU-sponsored internship.



Gillian Mazurek ’20 presenting her work at the University of Akron

Rachel Gongaware (BIOC, ’20) worked on optimizing a model from which to study Parkinson’s Disease and examined the effect of APE1 in a diseased and non-diseased state model at Duquesne University.

Daniel Maienshein (CHEM, ’19) and **Aidan Sutter** (BIOC ’19) participated in a computational modeling study with Dr. Falcetta at GCC finding and describing a temporary anion state of a model water tetramer. This project was supported by GCC’s Swezey Fund.

Ethan Conto (BIOC, ’19) was involved in production and purity testing at Sonneborn LLC.

Kelsey Aldrich ’19 presenting her work at Texas Christian University

Kelsey Aldrich (CHEM, ’19) worked in an REU-sponsored position at Texas Christian University in the Coffer lab. She explored cerium oxide and europium-doped cerium oxide nanomaterials as a photocatalyst by conducting dye degradation studies in addition to working on their synthesis and characterization.

Amber Leston (BIOC, ’20) explored biochemical control processes in anthrax under Dr. Devin Stauff ’05 at GCC, supported by the Swezey Fund.

Sarah Scrivener (BIOC, ’18) synthesized new organic compounds at the University of Maryland, Baltimore County in an REU-sponsored position.

Christian Butera (BIOC, ’19), participated in a project to identify genes which increase drought resistance in maize and millet at the University of Nebraska, Lincoln, in an REU-sponsored position.

Jimmy Olsen (CHEM, ’20) was based at Merck’s West Point, PA, campus and made and tested the properties of about 200 new compounds for drug development.

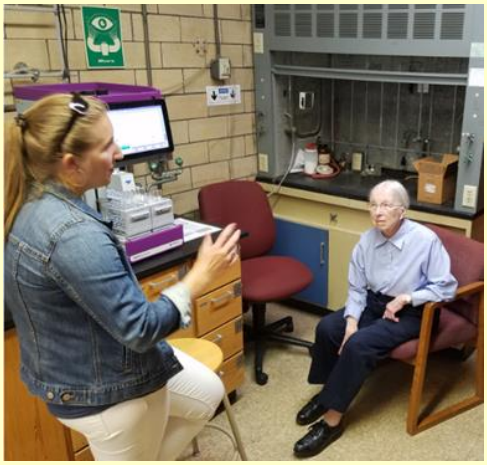
Johann Karunananthan (BIOC, ’19) spent the summer at City of Hope in LA working on a diabetes project. He was researching radioactive tracers to label islet and insulinoma cells.

Chemistry Department Receives Generous Donation

In the summer of 2018, the Chemistry Department received a generous donation from former professor Mrs. Sara Naegele. Her late husband, Dr. Edward Naegele, joined the Chemistry Department at Grove City College 1958, followed by his wife in 1966. Both retired from the department in 1990. Mrs. Naegele taught many recitation sections as well as ionic equilibria, nutrition, and quantitative chemistry labs, while Dr. Naegele's specialty was organic chemistry. He was better known for teaching general chemistry to many generations of Grove City College students.

Mrs. Naegele, who has been a wonderful friend of the department for many years, contributed to the purchase of a new instrument called a CombiFlash Nextgen 300 (pictured right). The instrument is an automated flash chromatography system that is primarily used to purify small organic and inorganic compounds. Traditionally, these types of compounds are purified using glass chromatography columns loaded with a solid adsorbent and an impure mixture of compounds. The column is eluted with a solvent system and the compounds are collected separately and isolated for further characterization. In this automated system, the sample mixture is loaded onto a pre-packed column and the solvent system is set up on the instrument. The user can then let the column run on its own without having to manually change test tubes or load more solvent. Other benefits of this system include built in ultraviolet detectors which allow the instrument to determine when a UV-active compound is eluting off the column, and stricter control over the solvent ratios used in the separation. Users can also adjust the method mid-run to optimize separation. The average gravity column traditionally used would take about three to five hours to run, while the CombiFlash completes the separation in about 30 minutes.

CombiFlash Nextgen 300 instrument is used for chromatographic separation of inorganic and organic mixtures.



Dr. Guevara (left) and Mrs. Naegele (right) discussing how the CombiFlash works and what it will be used for at GCC.

The CombiFlash has already been used for both research and teaching purposes. The students in advanced inorganic and organic labs use the instrument along with traditional column chromatography. As students prepare for careers in graduate school or industry, it is necessary to know both techniques. Many institutions have an automated chromatography instrument available to researchers and students from GCC will be better prepared to use them. In research labs, the instrument allows students to efficiently separate small amounts of material in very short time periods. This instrument is an incredibly valuable teaching and research tool and we are immensely grateful to Dr. and Mrs. Naegele for their generous contribution and dedication to Grove City College and its students.

Alumni Spotlights

Milo Westler '72

William "Milo" Westler grew up in Grove City, PA, and graduated from Grove City College with a bachelor's degree in Chemistry in 1972. While at GCC, he participated in organic chemistry research under the direction of Dr. John Shaw, which resulted in a couple publications. Following his time at GCC, Milo went on to pursue a master's degree in synthetic organic chemistry at John Carroll University and a Ph.D. at Purdue University where he worked with Dr. John Markley. Milo directed the NMR facility at Purdue (PUBMRL) before moving to the University of Wisconsin, Madison, to continue working with Dr. Markley.

Milo Westler and Nicolet NT-1180 computer console at Purdue, 1979. Photo taken by John Markley. Published in Markley, J. L., Westler, W. M. *Archives of Biochemistry and Biophysics*. **2017**, *628*, 3-16.

Dr. Westler's expertise lies in the field of NMR spectroscopy, where he has been an active member as the field has developed over the last forty years. Currently, he is the director of the National Magnetic Resonance Facility at Madison (NMRFAM) which was co-founded with Dr. Markley upon their arrival in Madison. The state-of-the-art facility has numerous high field NMR spectrometers of varying magnetic strength, and the center specializes in biologically driven research projects and development of new NMR technologies.

Steven Funck '74

Alumnus Steven Funck '74 received the Lamar Houston Service Award at the National Association of Scientific Materials Managers (NAOSMM) Conference in Spokane, Washington. Mr. Funck graduated from Grove City College in 1974 as a Chemistry major. He earned his Master of Science degree in Petroleum Engineering Management from the University of Kansas and a Master of Arts degree from the United States Naval War College. Mr. Funck is also a retired U.S. Navy Supply Corps Officer. After retiring from the Navy, Mr. Funck taught at HACC (Central Pennsylvania's Community College) and Penn State Harrisburg. He is currently the laboratory manager for the Department of Chemistry and Biochemistry at Messiah College in Mechaniscsburg, PA, and serves as the Chemical Hygiene Officer.

Steven Funck receives the Lamar Houston Service Award at the NAOSMM meeting in Spokane, WA, in 2018.

The Lamar Houston Service Award is given to individuals who show exemplary service to the NAOSMM. Mr. Funck has been a member of the organization for many years where he served as co-chair of the Certification Committee among other things. In addition to the Lamar Houston Service Award, Mr. Funck has previously received the designation as a Certified Scientific Material Manager (CSMM) from the NAOSMM.

Student Spotlights

Biochemistry Majors Play in GCC Bowl Game

With graduation looming in the near future for our seniors, our department would like to highlight two of our Biochemistry majors. These two have stood out not only for their academic abilities but also their efforts on our varsity football team for the past four years. Ethan Conto and Sam Henson have been involved in Dr. Kriley's research group focusing on the synthesis and characterization of novel derivatives of resveratrol and quercetin, two compounds known for their anticancer/antitumor properties. This is a project that was started by Jamie Alburger '13 when he was a student at Grove City College. Sam and Ethan were able to isolate a new product, whose structure was determined by both NMR Spectroscopy and x-ray diffraction. Both Ethan and Sam will be presenting this research at the National ACS Convention in the spring of 2019.

Another aspect of their time at Grove City College is their participation on the varsity football team. Our team was winless during their first two seasons at GCC but that did not stop these two from striving to do better. In 2017, during their third season, they ended a 33 game losing streak and beat St. Vincent College. That team ended the season with a 4-6 record and improved to fifth place in the PAC (Presidents' Athletic Conference). Going into their senior year in fall 2018, both Ethan and Sam were selected as captains. The team continued to improve under Coach Andrew DiDonato '10 and was able to end the season with an 8-3 record and the first post-season win in the history of GCC against Morrisville State University in the James Lynah Bowl.

Andrew DiDonato (head football coach Grove City College) had excellent things to say about these students. "Sam and Ethan were two of our captains that helped lead one of the biggest turn arounds in small college football. Each of them has a phrase associated with their name that will always be remembered in our program. Sam's phrase is 'don't make excuses, don't complain, extreme ownership.' He was the example to our team of the proper way to respond when faced with difficult circumstances. Ethan's phrase is 'content but not complacent.' He had the unique ability to be positive every day while working as hard as anybody. The impact these two have made will leave a lasting impression on our program."

To say that we are proud of these individuals is an understatement and we wish them well with their future endeavors after graduation in the spring of 2019. Sam plans on pursuing a Ph.D. in pharmaceutics while Ethan plans on attending dental school.

Students Present Research at National ACS Meeting in New Orleans

Four of our students presented their research at the National American Chemical Society meeting in New Orleans in March of 2018.

Ian Ferraro (CHEM, ’18) presented a research poster on “Fracturing on a Small Farming Community in Western Pennsylvania.” His work continued a roughly 20-year study of Butler County and the effects of the Marcellus Shale gas wells.

Mathew Genzink (CHEM, ’18) presented his research from Belgium entitled “Synthesis of Novel Ring Fused BOPHY Dyes.” Matt worked under the direction of Stijn Boodts and Wim Dehaen from the Department of Chemistry, JU Leuven, Belgium.

Timothy Graybill (CHEM, ’18) also worked with Matt on another research project that deals with the effects of derivatives of resveratrol and quercetin on a mouse cancer cell line developed by Dr. Durwood Ray (Professor of Biology 1994-2011).

Natalie Ziemer (BIOC,’18) was awarded a REU lecture symposium grant and was able to present her work on “Mild Synthesis of Novel Born Based Pharmaceutical Candidates by Copper Catalysis with CO_2” from a Summer REU program she attended at West Virginia University. Natalie presented her work both as an invited lecture and at the undergraduate poster session.

GCC students Matt Genzink ’18, Tim Graybill ’18, and Ian Ferraro ’18 in New Orleans for the ACS meeting in March 2018.

GCC students Natalie Ziemer ’18 and Christian Fifield ’18 at the ACS meeting in New Orleans.