CHEMISTRY DEPARTMENT NEWSLETTER

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A Word From Our Chairs

This year the Chemistry Department will be undergoing a leadership transition as Debbie Herrington ends her time as Unit Head and passes the torch to incoming chair Tom Pentecost.

Looking back—Dr. Debbie Herrington

As I step down from my role as Chemistry Chair, I find myself reflecting on the incredible journey we have shared over the past six and a half years. It has been a period of significant change, within our department, at GVSU, and in the broader landscape of post-secondary education.

During my time as Chair, we have said goodbye to several esteemed faculty and staff members who were instrumental in building the strong foundation of our department. Their contributions have left a legacy that we continue to build upon. At the same time, we have welcomed many new faces to our halls, enriching our community with fresh perspectives and energy. This fall, we are excited to welcome eight new members in visiting, affiliate, and tenure-track faculty roles.

Despite these changes, one thing has remained constant: our unwavering commitment to our students and their success. Our Chemistry Success Center is the most frequently used tutoring center on campus, a testament to the dedication of our faculty and students to providing exceptional support. Our faculty are consistently recognized both within GVSU and externally for their excellence in teaching, highlighting our collective dedication to educational excellence.

We continue to prioritize hands-on learning experiences for our students. Opportunities for internships, undergraduate research, community engagement, and work in our Chemistry Success Center and Chemistry Stockroom are abundant. These experiences are invaluable in preparing our students for successful careers and further studies. We also

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take great pride in celebrating the achievements of our students and alumni, showcasing their accomplishments in the Alumni in Action section on our website.

I am confident that our department will continue to thrive and retain our student-centered focus as Dr. Tom Pentecost steps into the role of Chair. Dr. Pentecost is an award-winning educator who demonstrates an unparalleled level of support for students, whether they are in his general chemistry classes, honors courses, upper-level physical chemistry classes, or seeking advice and mentorship. With his demonstrated dedication and passion for our students, faculty and staff, our department is undoubtedly in good hands.

Looking ahead—Dr. Tom Pentecost

Hello, it is my honor and pleasure to be the new chair of chemistry. Before I say anything else, I want to express my deepest thanks to the past chair, Debbie Herrington, and all the department staff for their help as I begin this journey. There are some big shoes to fill, and I will do my best.

This will be my 16th year at Grand Valley, and 28th year in higher education. To say that things have changed in that time is an understatement. (Feel free to ask me about life before the internet.) During my career, the backgrounds and skills students bring to our classrooms/laboratories have changed, and as educators we must evolve and meet the students where they are. One constant over these years has been the satisfaction of watching a student have their "a-ha" moment, nothing beats that.

As a department we are evolving to meet the needs of our students. We are doing this in many ways: Revising our courses to incorporate research-based pedagogies that increase student success. We are reaching out to majors, and potential majors, to get them integrated into the department community though Chem Club and other social events. We are also welcoming transfer students by strengthening our ties to local community colleges to ease this transition and get them off to a good start at GVSU. Please feel free to let us, me, know if you can think of anything else we can do to serve our current and future students.

On a personal note, I have spent most of my career teaching introductory chemistry courses. While there are a few students in these courses that are excited about the course, i.e. Chemistry/Biochemistry majors, the majority might not see the relevance of the course to their career path. I was reminded of the importance of these students earlier this summer. I had to have eye surgery and during my visits to the ophthalmologist's office I was assisted by two students, BMS majors, who were in my general chemistry course several years ago. It is a great perk of this profession to get to catch up with former students and celebrate their success. Our curriculum revision work will benefit these students and provide them with the foundation they need for their future studies.

To end this, I want to acknowledge our graduates/alumni and emphasize the impact they can have on our current/future students. During the upcoming academic year, we hope to see you at Ott lectures, department seminars, and other events. Remember you are still part of the department, and we always welcome news from you. (See page 4.)

Congratulations

Dr. Felix Ngassa has recently taken a position as the Assistant Vice President for Academic Affairs in the Office of the Provost. In his new role, Felix will continue serving the GVSU community by helping oversee curricular issues.

Dr. Debbie Herrington was appointed to a position as the dual Director the Regional Math Science Center and the College of Liberal Arts and Sciences Center for Experiential Learning. The RMSC serves as a bridge between GVSU and the K12 education community, and oversees important outreach programs such as Science Olympiad. In her work with CCEL, Debbie will help direct the roll-out of departmental High Impact Practices through the CLAS Voyage program.

THE ARNOLD C. OTT LECTURESHIP

The Arnold C. Ott Lectureship in Chemistry was created and endowed by a generous gift from Dr. Arnold C. Ott and Marion Ott. Dr. Ott received his Ph.D. in 1943 from Michigan State University in Chemistry/Physics/Bacteriology and was a leading chemist and entrepreneur in West Michigan. He was one of the co-founders of Grand Valley State University and served on the GVSU Board of Trustees for 28 years.

DAN NOCERA—FALL 2023

In September 2023, the Chemistry Department was pleased to welcome Dr. Daniel Nocera who serves as the Patterson Rockwood Professor of Energy at Harvard University. Dr. Nocera gave two lectures describing his research devoted to developing novel methods to capture and store solar energy. In his September 28 talk titled "The Global Energy Challenge" at the Grand River Room on the Allendale campus, he described his efforts to create a bionic leaf that could capture sunlight energy and use it to create fuel and fertilizer in locales with limited infrastructure. The next day, with the GVSU Chemistry community as an audience, he delved deeper into the chemical principles involved in this work in a talk entitled "Food and Fuel from Thin Air, Any Water and the Sun".

KENT KIRSHENBAUM—WINTER 2024

The Spring Ott lectureship was given by Dr. Kent Kirshenbaum, Professor of Chemistry at New York University. In addition to his work exploring the pharmaceutical potential of peptidomimetics, Dr. Kirshenbaum is a world-renowned molecular gastronomist whose outreach efforts include appearances on the Food Network, the Cooking Channel, the Science Channel and Sid the Science Kid. On Thursday evening, April 18 he presented a lecture entitled "Biomimetic Cuisine: The Chemistry, Craft, and Culture of Our Future Foods". In this talk, he described the molecular basis of the taste and texture of a variety of common foods, and also discussed the future of artificial meat. The following day, he switched to describing his laboratory's work in a talk titled "Biomimetic Chemistry: Innovating Molecular Structures and Functions Inspired by Nature". In particular, he spoke about his work to create N-substituted glycine "peptoid" oligomers that have shown remarkable potency as antiviral agents.

WWW.GVSU.EDU/CHEM

get connected

Alumni Portal - We Need You!

Our students — those with us now, and those who were here in times past — have always been the heart and soul of the GVSU Chemistry Department. In recent years we have made it a goal to find ways to stay connected with our alumni to highlight the exciting things they are doing, and to better integrate Laker chemists from different eras. To do this, we have initiated a new alumni portal — a one-stop place where you will find a variety of different ways you might reestablish a connection to the GVSU Chemistry family.

Please visit www.gvsu.edu/chem and look for the portal pictured below!

Help promote opportunities for GVSU students

Does your company have an internship program? Are you looking to recruit students to your graduate program? Do you know of other opportunities that we can share? The new portal gives you a place to let us know!

Highlighting alumni success

If you have not done so already, check out the Alumni-in-action section on our website. Here you can learn about some of the great things our alumni are doing. Would you like to see your story there, or to nominate someone for this feature? We would love to hear from you, and there is a spot to let us know on the portal. By the way, the connections we make through telling these stories have been known to lead to more extensive alumni spotlight features in the newsletter.

Staying connected through social media

If you are looking for a low-key way to stay connected, we maintain a presence on two social media platforms. The departmental LinkedIn site is a spot for professional connections, job opportunities and news about Laker Chemistry accomplishments. The Chemistry Stockroom maintains a Facebook page for social connections with everyone in the GVSU Chemistry family, and fun news about what is going on in the department. Connect with these sites at **GVSU Chemistry and Biochemistry** on LinkedIn and **GVSU Chemistry Stockroom** on Facebook.

Impact students with your experience

Many schools have informal networks for alumni to serve as a resource to current students. Are you interested in talking to a Chemistry or Biochemistry major who is applying to the graduate school you attended or the company you work for? Are you using your degree in a non-traditional field, and feel that you could speak to students who might be interested in that area? We need your wisdom!

ANNUAL STUDENT AWARDS

In April of 2023, the Chemistry Department honored many of its most outstanding students for the 2022-2023 academic year. The award winners in the different categories were as follows:

EXCELLENCE IN A DISCIPLINE AWARD

The top award for undergraduate Chemistry and Biochemistry majors. To be eligible, a senior, presenting in CHM 491 this academic year, must be a declared Chemistry or Biochemistry major and have an overall GPA of 3.5 or greater.

Pictured at left are award recipients **Jonathan Bajko** (Chemistry) and **Kian H. Barnes** (Biochemistry).

ACS ANALYTICAL CHEMISTRY DIVISION UNDERGRADUATE AWARD

Abigail R. Miller This award is given to a declared Chemistry or Biochemistry major who is outstanding in CHM 221 (Analytical Chemistry) and CHM 325 (Instrumental Analysis).

ACS BIOLOGICAL CHEMISTRY DIVISION UNDERGRADUATE AWARD

Zoe X. Ziegler This award is given to a declared Chemistry or Biochemistry major who has excelled in the Biochemistry I/Biochemistry II/Biochemical Techniques sequence.

ACS INORGANIC DIVISION CHEMISTRY UNDERGRADUATE AWARD

Christina Jiang This award is given to a Chemistry or Biochemistry major that has excelled in the inorganic chemistry courses (Principles of Inorganic Chemistry/Advanced Inorganic Chemistry).

ACS ORGANIC DIVISION UNDERGRADUATE AWARD

Jonathan P. Bajko This award is given to a graduating Chemistry or Biochemistry major who has excelled in a combination of organic chemistry courses (Advanced Topics in Organic Chemistry/Synthetic Polymers/Organic Synthesis and Characterization) and research and has a desire to pursue a career in chemistry.

ACS PHYSICAL CHEMISTRY DIVISION UNDERGRADUATE AWARD

Katherine R. Mast This award recognizes a declared Chemistry or Biochemistry major that has excelled in the upper level physical chemistry sequence (CHM 356/358).

ORGANIC CHEMISTRY MAJORS UNDERGRADUATE AWARD

Robert J. Dean and Allison C. Doyon This award recognizes a student that excels in the majors organic chemistry sequence (CHM 245/246/247/248). The student must be a declared Chemistry or Biochemistry major and have completed the CHM 245-248 sequence by the end of the academic year. The student is selected by the instructors for these courses.

OUTSTANDING SERVICE AWARD

This award will be given to a declared Chemistry or Biochemistry major who has made significant contributions in service to the department.

This year's award was given to **Lillie G. Waldron** and **Brianna M. Gordon** (pictured below).

OUTSTANDING UNDERGRADUATE RESEARCH AWARD

Sierra M. Hilditch In order to be eligible for this award, a declared Chemistry or Biochemistry major must show outstanding skills, motivation, and progress in undergraduate research.

GREEN CHEMISTRY AWARD

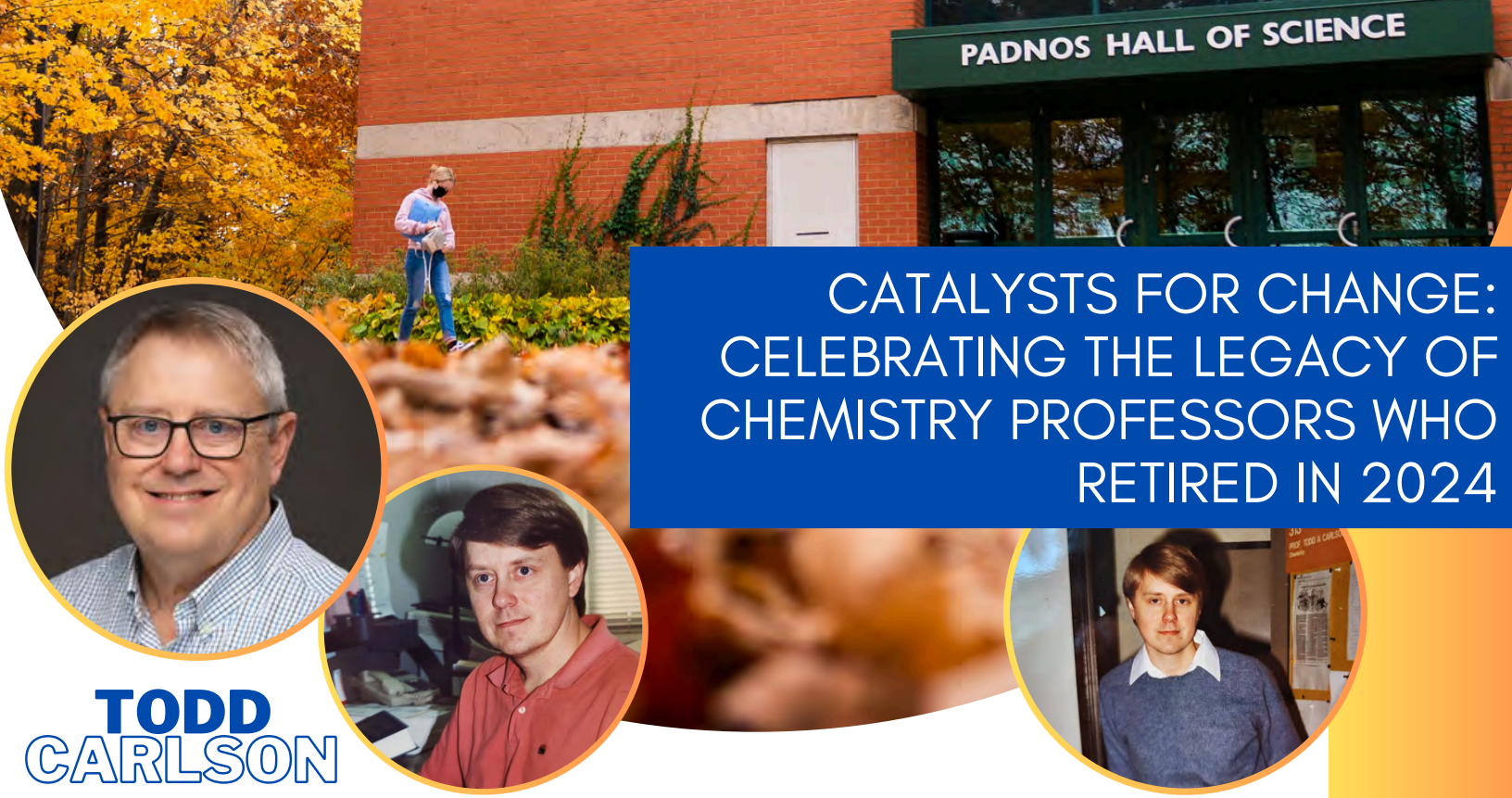
Nicolette A. Owen This award is given to a declared Chemistry or Biochemistry major who has excelled in the Green Chemistry courses (Green Chemistry for Sustainable Environment/Green and Environmental Chemistry Laboratory).

SENIOR CHEMICAL EDUCATION AWARD

Haley M. Clark This award is given to a Chemical Education major, typically a graduating senior or other student who has successfully completed Physical Chemistry in Secondary Education (SCI 440) and who has demonstrated professionalism as a preservice teacher.

AMERICAN INSTITUTE OF CHEMISTS AWARD

This award is given to a senior Chemistry major and a senior Biochemistry major who meet all or most of the criteria for the Outstanding Senior Award. This year, the winners were **Katherine R. Mast** (Chemistry) and **Madeleine Lang** (Biochemistry).



CATALYSTS FOR CHANGE: CELEBRATING THE LEGACY OF CHEMISTRY PROFESSORS WHO RETIRED IN 2024

TODD CARLSON

It was in August of 1986 that Todd Carlson finished his graduate studies at Michigan State University, and he didn't wait long to get started on his career: "I defended my PhD thesis on a Thursday, got my diploma on Friday, moved to Grand Rapids on Saturday, and started at GVSU on Monday. The department was still very small in those days, but bringing him on as a second biochemist marked the beginning of a period of massive growth at the university. Over the last 38 years, Todd taught not only all of the different Biochemistry classes, but many others including Introductory Chemistry, General Chemistry, Chemistry and Society, Introductory Organic Chemistry—even Physical Chemistry. Known for developing in-class case-based projects as teaching aids, he notes: "I really enjoyed crafting group exercises for CHM 230, CHM 232, and CHM 461, although I regret that it took 38 years to get them just right."

Todd had a long interest in the use of web-based molecular structure computer programs as a pedagogical tool. Focused first on the Chime program, then the JMOL applet, and later the Javascript version JSMOL, he developed a large number of study modules covering some aspect of protein/enzyme structure, each featuring a simple structural representation that could be zoomed and rotated for 3D viewing. Todd immersed himself in the JSMOL community through online forums, and even made a developmental contribution to the field by originating the "MoveTo" command. His skill in this area was shared with the department—fellow biochemist Dave Leonard notes that his own efforts in molecular visualization were enabled by his colleague's work: "I would take Todd's programs and just swap out my structures for his—I really relied on his insight into the programming".

In addition to his teaching, Todd was well known for major service efforts at the university, including long terms on the University Curriculum Committee and the Academic Standards and Policy Committee. He was a long-time Science Olympiad volunteer, even developing a novel event (Storm the Castle). All of his service work was well regarded, as attested by his receipt of the CLAS Lifetime Service Award and the Pineapple Award for advocacy of internation education. Todd's most notable service to the Department was his stint at the helm (2004-2013): "I enjoyed being Department Unit Head for nine years as it allowed me to interact with people all across the university." It was a time of astonishing growth for GVSU and the Chemistry Department, which added more than 10 tenure-track faculty in that period. He also oversaw the advent of several links with Chemistry programs in other countries, and participated in visiting delegations to Babeș-Bolyai University in Romania and Middle Eastern Technical University in Turkey.

Todd commented that he especially loved the start-up of a new academic year. "Fall is such a magical time on campus as everyone is excited about a fresh start. In a university, rejuvenation happens in Autumn. It's such a luxury working in an environment where no matter how much you screw up—students and faculty alike—you get to start over in the Fall." To sum up his time at GVSU, he says, "I enjoyed all my interactions with my colleagues. You can't be bored working with such a diverse group of interesting people." His colleagues feel the same way, and will miss the extensive conversations with him on eclectic subjects such as beer brewing, trivia, corpse flowers and all things microbial. Asked what comes next for him in retirement, he said "I look forward to playing the cello again (string quartets and orchestras), traveling (off to France soon), and backpacking (climbing Katahdin in Maine in August)."

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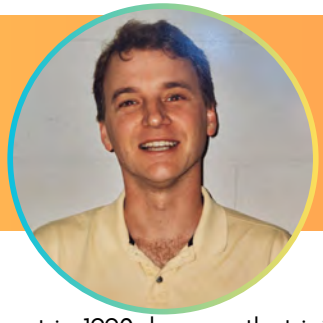
BLAIR MILLER


When Blair Miller interviewed for a position with the Chemistry Department in 1990, he says that initially, he didn't know a lot about the university."In the days before the internet, it was rather tough to find an accurate picture of what GVSU was like". GV State Colleges had recently become Grand Valley State University, and it was clear that there were major changes afoot in Allendale. He knew that West Michigan had nice beaches, blueberries and snow, and those were all attractions for him and his wife Jill. The interview was mutually positive, and he remembers calling up Todd Carlson and asking if everyone was really as nice as they appeared during the interview—"he assured me that they were" and Blair decided to accept the offer: "It ended up being a great fit."

As the new Analytical Chemist, he really loved being on the ground floor of building a growing program and having a lot of latitude in designing the Analytical courses. "It was challenging to make Quantitative Analysis fun, but I always got a little adrenaline rush when each student would come to the realization that they really could do titrations with fantastic reproducibility" he recalls. In addition to Quant, he routinely rotated through the instrumentation course (CHM 325), Analytical Chemistry (CHM 221), General Chemistry II (CHM 116) and a variety of Environmental and Green Chemistry electives. "In the early days, the instrumentation room was so small that we ran many separate lab sections with 3 or 4 students in each. My teaching load was probably off the charts, as was everybody's".

Arriving at the beginning of the big growth era at GVSU was a big positive for Blair. "It was the excitement of bringing in so many new faculty members over the course of years and getting to work with and know them all. We really strived hard to keep the place feeling small and personal so that each person felt that they were key to our success with the ever-increasing student numbers." That growth led to many changes in the department's physical space as well, including the move to a new building in 1996. He recalls that "we had to quickly shift all of our office materials along with all of the lab materials out of the old Loutit and into Padnos through a make-shift hole in the wall. It was a mad dash to meet the contractor's deadline, and everyone pitched in." Even more so, his fond recollections turn to the people he worked with, noting that the hallway conversations and lunches with faculty friends will always be cherished.

Blair made major service contributions to the department, most notably his long stint as associate chair. The entire department was indebted to his behind-the-scenes efforts to arrange the schedules for over 50 instructors, scores of classrooms and hundreds of lectures and labs. He served as associate chair for three different Chemistry Unit Heads (Nikkel, Carlson, and McBane)- well over a decade. George McBane says "I certainly treasured his cool head and steady hand through all sorts of challenges," adding that Blair knew more about Chemistry's space and its possibilities than anyone else. He was a member of many service committees including University Faculty Facilities Planning Advisory Committee and the Math/Science Division Dean's Advisory Committee. For as long as anyone can remember, Blair was the go-to person for evaluating lab notebooks from students who took AP Chemistry, allowing many of them to jump straight into organic chemistry in their first college semester. He was a long-time member of West Michigan ACS, serving as chair in 2001, and was a regular event supervisor with Science Olympiad.

Looking back, he takes great satisfaction in the mission of the department: "I'm very proud of being involved with the development of so many students that went on to be great scientists. I have also been so amazed and quite proud of the talented department that we have. For me, it has always been a place focused on our students." As with most retirees, he plans to get in some trips and have more time for family events, photography projects and perhaps more genealogy work. "And I still hope to stay in touch with my GVSU family".



MARY KARPEN

When Mary Karpen interviewed for a faculty position in the Chemistry Department in 1995, she made several observations that gave her the idea it would be a good fit. "It was obvious that the department was cohesive, and focused on student learning," she says. The fact that GVSU was located in West Michigan near her family and Lake Michigan was also a big plus, and she ended up taking the job and joining the rapidly expanding department as the third biochemist. Over the years, Mary taught all things biochemistry (CHM 230, CHM 232, CHM 461), but with extensive strong training in Physical Chemistry and Computational Chemistry, she was also a regular in the Physical Chemistry laboratory.

Mary quickly realized she possessed a great love of teaching and working with students: "I discovered early on how each person thinks about chemistry and biochemistry is fascinating. There are so many ways to think about hydrogen bonds, for example, with a remarkable number of misconceptions. Teasing out how a student is representing the interaction and then helping them shore up their mental model was surprisingly rewarding." Mary was particularly interested in adapting new and effective modes of teaching and for

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many years used the Process-Oriented Guided Inquiry Leaning (POGIL) method in her classes. With her computational background, she was also drawn to using new technologies to help in the classroom. She developed many of her own innovative tools including computer animations of interesting biochemical phenomena, virtual reality programs to explore 3D macromolecules, and she even got a classroom fit for 3D projection. "These tools were not present in my education, and figuring out ways to effectively use technology to teach biochemistry was challenging and engaging. In my early days, I taught students how to use a mouse, introduced them for the first time to the internet. Watching them discover the power of hyperlinks was fun." For her extensive efforts in this area, Dr. Karpen received the PEW Teaching with Technology Award in 2005.

Karpen's scholarship was focused on using computational modeling to understand protein structure and function. "I love proteins - how they work, their shape, and their beauty. Sharing the beauty of protein structures with students was perhaps my fondest pursuit." She was an active research mentor to dozens of students, and her unique computational skills led to a variety of collaborations with faculty colleagues in both research and teaching initiatives. One of her proudest achievements is creating a collection of 3D protein molecules which can be found at https://sketchfab.com/gvsu-chem/models.

Mary used her talents in a variety of departmental and university service roles over the years. Her expertise in technology in particular led to long-term service on the Academic Computing Advisory Committee, and she was a go-to person in the department for keeping computational resources up-to-date. She was a long-term leader of a collaborative tutoring program for advanced science courses in Grand Rapids Public Schools and a mentor to several RISE students. For her extensive advocacy for policies that support women's professional growth, she received the Women's Commission Maxine Swanson Award in 2019. For the last ~10 years of her career, Karpen served as the lab coordinator for CHM 230, initiating several curricular innovations and the use of online manuals in the laboratory.

When asked what retirement holds in store, Karpen says, "I am very much looking forward to honing my woodworking skills, and also collecting the 3-D virtual reality biochemistry models my students and I created into an open education resource such as LibreTexts."

TOM DUEWEKE

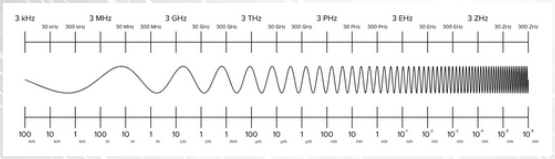
Prof. Tom Dueweke joined the Chemistry faculty in 2008 after 13 years as a principal scientist with Upjohn/Pharmacia/Pfizer developing HIV and Hepatitis C anitvirals. "I'll always think of GVSU as a happy place with very earnest students, probably because I was shielded from administrative work", he says. Tom taught a variety of different classes covering general chemistry (CHM 115 and CHM 116), organic chemistry (CHM 230) and biochemistry (CHM 230 and 232), and relished his role as a utility guy—filling in wherever he was needed during a particular semester. "I especially enjoyed interacting with our earnest students in the CHM 116 "Shifty Equilibria" lab and the CHM 232 sugar lab with the salivary amylase portion". He was active beyond the classroom as well, serving as a faculty advisor for the student Red Cross club and Gift of Life. After his first few months of retirement, Tom notes he is "enjoying being a day laborer and an itinerant scholar so far, and I'm looking forward to seeing more of my distant children and grandchildren".

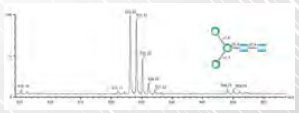
9

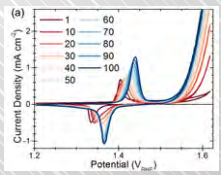
GVSU Chemistry Instrumentation Powerful Pedagogy

GVSU Chemistry is one of the largest departments in the country fully focused on undergraduates, and its size provides a huge advantage in one area critical to both research and student training: instrumentation. For full accreditation, the American Chemical Society requires that students have access to an NMR, and at least four of the following five instrument groups:

- Molecular spectroscopy
- Atomic spectroscopy
- Mass spectrometry
- Separation techniques
- Electrochemical analysis







Recognizing the key role that instrumentation training plays in preparation for industry careers and advanced studies, the department has invested heavily to make sure that CHM and BIC majors get hands-on experience with a broad range of modern equipment. Not only do we possess a research-quality 400 mHz NMR, but also multiple instruments in all five of the other categories. The importance of these resources is recognized by the College of Liberal Arts and Sciences, which provides funding for a dedicated instrument technician (Dr. Stephanie Bilinovich).

NMR

The department's 400 mHz Joel FTNMR was purchased through a grant from the National Science Foundation in 2017. Dr. Shannon Biros, who led a multidisciplinary team of applicants to acquire the instrument, notes that it has a number of features that allow authentic research-type experience in sophomore-level classes. Of particular note is the autosampler, which allows all students in the major's organic class the opportunity to run and interpret their own samples. The instrument also has a multi-nuclear probe, expanding its use to 77Se, 19F, 31P and 29Si. The NMR gets a lot of attention from Bilinovich, who maintains it, carries out regular liquid nitrogen and helium fills, and trains students on standard operating procedures. The gas charges alone top $12,000 per year, but the investment is well worth the gains in broad training as well as research capability: "We help our students get a running start in graduate school or industry" notes Biros.

LC-MS

An Advion CMS LC/MS was purchased with funds provided by a grant from the National Science Foundation. This instrument combines HPLC separation with a quadrupole mass spectrometer with an extended mass range analysis capability to m/z 2000. Dr. Laura Hawk led the acquisition effort, bringing together a group of faculty with interests in organic, analytical and biochemistry who would benefit.

ICP-OES

Many departments have an atomic absorption spectroscopy instrument for detection of metals, but far fewer have the more advanced Inductively Coupled Plasma Optical Emission Spectrometer. This >$80,000 instrument was purchased with funds proved by the college as well as from the Weldon Endowed Fund. This technique is a mainstay in Instrumental Analysis (CHM 325), and is used by several research groups as well as the Geology Department.

Maintaining this large stable of quality instrumentation takes constant maintenance and investment. As at most primarily undergraduate universities, GVSU traditionally took a "crisis" approach of looking for funds as instruments broke down. In the last few years, with the support of the college, the department has developed a more forward-looking approach. Funds are put aside every year for future repairs, upgrades and replacements, with life-time estimates helping to minimize surprises.

ALUMNI SPOTLIGHT

Nicholas Myers '09
B.S., Chemistry

Documentary Standard Scientist, USP®

Why did you choose GVSU and what year did you graduate? Quality, location, and affordability! Being a first-generation college graduate of a farming family, I needed an affordable, high-quality education close to home. I graduated with a BS in Chemistry in 2009.

What are you doing today, and how did your education at GVSU help prepare you for your current work? I am a Documentary Standard Scientist at the United States Pharmacopeia (USP), a 200-year-old scientific nonprofit organization that publishes quality standards for medicines. Manufacturers and regulators in over 140 countries rely on USP's standards to help ensure the quality of their medicines. I liaise with scientists from pharmaceutical companies, expert committees, and the FDA to develop standards that meet the needs of stakeholders yet align with regulators' quality expectations.

GVSU's curriculum laid a strong, well-rounded foundation that propelled me through graduate school and still lasts into my career today. Most importantly, I conducted research in Dr. Matchett's lab. Research exposed me to advanced lab practices and instrumentation, the scientific literature, peer review, and perseverance. Immediately after graduating from GVSU, I worked for two years in a quality control lab at a pharmaceutical company in Michigan.

What was the biggest surprise for you in the path you have chosen? Living in a country with well-regulated pharmaceuticals, I am confident the medicine I purchase is exactly what is stated on the bottle, safe to consume, and efficacious. I was shocked when I learned that 10% of medicines in low-and-middle-income countries (LMICs) are substandard or falsified. Many people around the world suffer health consequences due to unscrupulous manufacturers taking advantage of underregulated medicine supply chains. This compelled me in my first year of graduate school to join a research lab that was tackling this problem. During that time, I developed inexpensive test card technologies for use in LMICs to detect substandard antibiotic products. My PhD adviser and I collaborated with pharmacovigilance professionals in Kenya to validate the technologies using pharmaceuticals from their marketplace. We also traveled to labs, hospitals, and pharmacies in Kenya to understand better the challenges and adapt the technologies to their capabilities.

What is the most exciting (or gratifying) part of your current work? I find it exciting to see USP promptly leverage its staff and stakeholders to address emerging public health concerns, such as COVID, nitrosamine impurities, and Mifepristone. I also enjoy the culmination of years of work by USP staff, manufacturers, the FDA, and USP Expert Committees to create an official standard. Both of these protect medicine quality and public health, which is rewarding to be involved with.

What advice do you have for GVSU Chemistry students who wish to pursue the same path as you have? Act courageously and step out of your comfort zone to gain experience. It is scary at first, but if you have the opportunity to join a research lab, write a publication, write a grant proposal, or attend a conference, then do it! Hiring managers will look for these types of professional experiences. Plus, your first accepted publication or grant award will make you feel amazingly accomplished and motivate you to keep going.

What do you like to do with your time outside of work? I am a pastel artist, which is a skill I have been learning since the pandemic lockdown. I was bored at home and needed mental stimulation, so I decided to learn something new. I purchased self-help material and art supplies, and I studied the elements of art and the principles of design. With the guidance of many teachers on various social media platforms, I have created several pieces that proudly hang in the homes of my family and friends.

Any other comments? If you ever wondered what good a chemistry degree could do for a person, consider this. I could be tending to cows on the family farm, but instead, I am helping people all around the world get the high-quality medicines they deserve. My GVSU degree took me from farm to pharma, and forging this path has led to a liberating and rewarding career.

FACULTY AWARDS

BRAD WALLAR—MICHIGAN DISTINGUISHED PROFESSOR OF THE YEAR AWARD

Professor Brad Wallar received the 2024 Michigan Distinguished Professor of the Year Award from the Michigan Association of State Universities. Wallar is a highly engaging and inspiring instructor in all levels of Biochemistry education, and is lauded for using real-life examples to connect students to cutting-edge concepts from COVID, cancer or antibiotic resistance research. He also excels as a scholar, with multiple successful grants from the National Institutes of Health and National Science Foundation, over 15 published manuscripts, and dozens of presentations at scientific conferences. Most notably, Brad is known for his extensive mentoring, serving as an advisor for 16 Honors College projects, five Goldwater Scholarship applicants, 11 Student Summer Scholars, two Modified Student Summer Scholars, a Beckman Scholar, three McNair Scholars and five RISE Scholars. In acknowledging this high honor, Provost Fatma Mili says, "Professor Wallar is a pioneer at GVSU regarding undergraduate scholarship and has made impactful contributions to the infrastructure for supporting undergraduate research."

RACHEL POWERS—DISTINGUISHED CONTRIBUTION IN A DISCIPLINE

The University Distinguished Contribution in a Discipline Award for 2024 was conferred on Prof. Rachel Powers. Powers research program is internationally recognized for more than two decades of advances in the understanding of the role β-lactamase enzymes in bacterial antibiotic resistance. She has mentored over 40 students in the art of protein X-ray crystallography, an advanced structural technique that is rarely accessible at primarily undergraduate institutions. Her work has been published in over 20 peer-reviewed manuscripts and presented at national and international conferences. She is a Fullbright Scholar, a Cotrell College Science Scholar, and has received more than $1.5 million in research funding from the National Institutes of Health. In addition to working with GVSU students and faculty, Dr. Powers maintains collaborations with scientists from Case Western Reserve University and The University of Modena in Italy.

CHRIS LAWRENCE—PEW TEACHING EXCELLENCE AWARD

Professor Chris Lawrence was selected to receive the Pew Teaching Excellence Award, with the selection committee citing his well-crafted materials, interactive lectures and a love for the work. Lawrence, a Physical Chemist who started at GVSU in 2004, teaches General Chemistry II, as well as Physical Chemistry lectures and labs. He is known to go beyond his normal workload to give students access to material not normally in the undergraduate curriculum, having taught an advanced quantum chemistry course more than ten semesters. His students note that he is patient, caring and readily available for extra time, with one Physical Chemistry student saying "Dr. Lawrence's understanding of our confusion and genuine concern that we learned the topics presented are the reason I succeeded in Physical Chemistry."

SARAH CLARK—PEW EXCELLENCE AWARD FOR TEACHING AND LEARNING ENRICHMENT

The Pew Excellence Award for Teaching and Learning for 2024 was awarded to Professor Sarah Clark, who has served as the Director of the Chemistry Success Center and taught in the department since 2014. She is cited for her expert knowledge in chemistry education and a strong focus on making sure the CSC is welcoming and inclusive of all students. Clark recruits, trains and coordinates a large cohort of student tutors, and she has also successfully established a culture of faculty participation in CSC tutoring. The CSC is by far the most extensively used tutoring center on campus, and program feedback is excellent. In addition to her administrative duties, Clark is known as a caring and effective instructor, bringing innovations such as standards-based grading to her CHM 100 class. One appreciative student said of her: "Prof. Clark made it very enjoyable to come to class and she wanted to see us succeed—that encouraged me to do so."

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