

CHEM / BIOCHEM

Newsletter for Alumni and Friends

Spring 2022

From the Chair's Desk



Joseph Aldstadt

Dear Friends of the Department of Chemistry & Biochemistry,

We hope our biannual Newsletter finds you well. Things have reached a state of near-normalcy since Spring Break as the pandemic has begun to ebb. Looking back over the past 2+ years, it's gratifying to reflect upon how well our faculty, staff, and students persevered through such tumultuous times. We're particularly proud that we were the only UW System campus to successfully have "in-person" labs beginning in the Fall 2020 term.



Jon-Marc Rodriguez

Two major developments this semester: we hired two tenure-track Assistant Professors and construction began on our New Building. Dr. Jon-Marc Rodriguez (Chemical Education) and Dr. Arjun Saha (Physical Chemistry) will be joining our faculty in August. We are eagerly looking forward to their arrival! Construction of our New Building began in December, with the official "groundbreaking" ceremony in late January. VJS Construction Services, Inc. (Pewaukee) is the contractor and they've been "busy as beavers" since December.



Alas, the Sciences Parking Lot is no longer but we'll make much better use of that space!



Arjun Saha

Joe

UNIVERSITY of WISCONSIN
UWMILWAUKEE

College of Letters & Science

Meet Our Lecturers



Charles Allen

Charles Allen has been teaching at UWM since 2001. He began as an instructor for UWM's Veterans Upward Bound (VUB) program. Dr. Allen is a retired Air Force Pilot and Gulf War veteran. In 2003 Charles began teaching math for UWM's Academic Opportunity Center (AOC), now called the Educational Opportunity Center (EOC). In 2007, Dr. Allen joined the Chemistry & Biochemistry Department. He has been teaching CHEM 106 ever since.

Having taught at UWM for over 20 years, Charles has a hard time narrowing down his favorite teaching moments. He says, "if I had to pick, he loved watching his two youngest children graduate from UWM". In his free time, Charles enjoys hunting, fishing, and flying. For the last four years, he has been a part-time certified instructor for the Wisconsin Aviation, teaching ground flight lessons. Before Charles began his teaching career, he was a General Medicine Physician.

Hannah Wagie has been teaching part-time at UWM since Fall 2020. Hannah was a graduate student at UWM from 2009-2015. While she was a student in Prof. Geissinger's lab, she worked as teaching assistant for Chem 100, 102, 104, and 221. As a lecturer, Hannah has taught Chem 100, 560, and 561. Hannah also teaches general chemistry part-time at Milwaukee School of Engineering (MSOE). Before teaching at UWM and MSOE, Hannah taught biochemistry at Wisconsin Lutheran College. In addition, she taught high school chemistry through the Upward Bound summer program through UWM.



Hannah Wagie

When asked about her memorable teaching moments, Hannah says: "It was a crazy realization how far I'd come. I had my first TA assignment teaching a CHEM 100 discussion of 18 students during my final semester as an undergrad. By my final semester as a graduate student, 6 years later, I was walking into a big lecture hall teaching the same CHEM 100 course, but as a lecturer to a group of 180 students!" Hannah says that she loves teaching. She explains what a privilege it is to share her enthusiasm for chemistry with students. She hopes they leave her class with genuine love for science.

In her free time, Hannah likes to take and collect photographs of the wildflowers she encounters while hiking. Ever the scientist, Hannah adds: "Skunk cabbages are typically the first I see in March, and they have a metabolism that produces enough heat to melt snow!"



Kayode Medubi

New Graduate Student Welcome

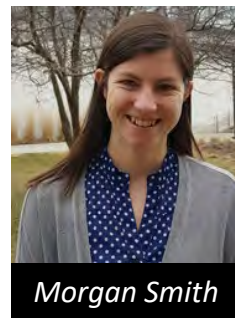
Kayode earned his bachelor's and master's degrees in Chemistry from the University of Ilorin in Nigeria. Kayode states while earning his bachelor's degree, he worked on "mixed drug metal complexes to fight antimicrobial resistance". While completing his masters, he worked as a research assistant.

Kayode says that he is excited to join the UWM Chemistry program and to expand his knowledge of instrumentation and research.

Farewell to Morgan

After five years as the Department's Laboratory Supervisor, we bid Morgan Smith farewell. Morgan began working at UWM in 2016 while earning her master's degree in Chemistry at Concordia University. During her time as Laboratory Supervisor, Morgan completed several large-scale projects for teaching and research labs.

Morgan says her favorite part of working at UWM was the amazing staff, faculty, and students. Morgan is now working as a Chemist in research & development at A.P. Nonweiler in Oshkosh. We wish Morgan the best in her new role and new city!



Morgan Smith

Support for Undergraduate Research Fellows (SURF)

The Department of Chemistry & Biochemistry continues the longstanding tradition of mentoring SURF students. The SURF program is made possible by the Office of Undergraduate Research and is designed to foster faculty-student research collaborations. Students have the opportunity to engage in thoughtful and progressively sophisticated work central to the overall research program of the principal investigator.



Xhoni Dharmo

Xhoni is an undergraduate student at UWM majoring in Biochemistry. He received SURF support for the Spring 2022 semester and works together with graduate student Trevor Melkonian in Prof. Silvaggi's lab to identify test for enzymatic activities in proteins of unknown function from an uncharacterized

biosynthetic gene cluster. Upon graduation from UWM this spring, Xhoni plans to pursue employment in the fields of biomedical or analytical chemistry.



James Mendez

James is an undergraduate Biochemistry major. He received SURF funding from OUR for the Spring of 2022. James assists graduate student Trevor Melkonian with the expression, purification, and crystallization of several proteins of unknown function from an uncharacterized biosynthetic gene cluster. This

research is part of the L-Arginine Oxidase project in Dr. Silvaggi's group. After graduating this spring, James is planning to attend dental school to become a Doctor of Dental Medicine.



Sarah Swartwout

Sarah is an undergraduate Biology major with a minor in Chemistry. She received SURF for the Spring of 2022 and assists graduate student Daniel Webb with the synthesis of novel imidazo- benzodiazepines. This research is part of the drug discovery effort of the Arnold

Group to develop new treatments for asthma and atopic dermatitis. Once she completes her studies at UWM, Sarah is planning to obtain her Doctor of Dentistry and engage in scientific/clinical research while in dental school.



Julia Vogt

Julia is an undergraduate student majoring in Biochemistry with a minor in Psychology. Julia received SURF for the Spring 2022 semester and works with graduate student Michelle Meyer from the Arnold Group to identify new treatments for atopic dermatitis. In the future, Julia is planning to obtain her PhD

in Biochemistry or Chemistry to pursue her dream of working in a pharmaceutical laboratory.

2022 Undergraduate Research Symposium

UWM's annual undergraduate research symposium celebrates the collaborations of our undergraduate students with our research-active faculty and staff across all our schools and colleges. The undergraduate symposium also celebrated UWM's R1 status. This year, 11 Chemistry & Biochemistry students presented their research.



Ali Alyousef

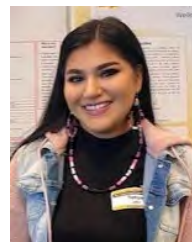
Mirza Group,
"Estimation of
Carmofur and 5-
Fluorouracil in
Plasma and Other
Biological Tissues
Using Mass
Spectrometry"



Xhoni Dhamo

James Mendez

Silvaggi
Group,
"Purifications
of Different
Proteins"



Tehya John

Blecking Group,
"Design and
Development of
Scientific Skill-
Building
Activities for
High School
Students in the
ACS SEED
Program"



Dhivyashree Murugan

Peng Group,
"Biological
Investigation of
Phenylboronic Acid
Nitrogen Mustards
Induced Cell Death
in Triple Negative
Breast Cancer"



Ranjak Joshi

Jermarcus Lewis

Mirza Group, "Quantification of
Ceramide & Sphingosine 1-
phosphate Levels In vitro in
U87MG cells after Administration
of ASA1 Inhibitors Using High-
Performance Liquid
Chromatography Mass
Spectrometry"



Olivia Ortiz

Blecking Group,
"How 100 Level
Chemistry Students
Evaluate the
Relevance of Course
Topics for Their
Career/Personal
Lives"



Sarah Swartwout

Arnold Group,
"Optimization
of a Novel
Synthetic
Route to
Generate New
MIDD0301
Analogues"



Taylor Wilcox

Arnold Group,
"Development of
New Treatments
for Neuropathic
Pain Based on
Imidazodiazepines"

Outstanding Presentation Winner

Razia Hafeez, Woehl Group, "Corral Trapping of Microscopic Particles"



Razia Hafeez

The purpose of this project was to gain familiarity with the technology and methods used with corral trapping. Corral trapping is a novel method for confining microscale and nanoscale particles (including biomolecules) in solution using electric fields. Trapping is achieved using electrophoretic forces, which act on charged particles, and dielectrophoretic forces, which act on both charged and uncharged particles. As part of the project, we tested a home-built capacitor to deliver charges to the trapping electrode and investigated the possibility of using defocused particle tracking to determine the particle's z location.

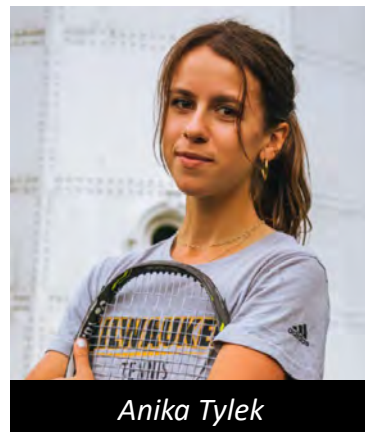
Undergraduate Student Spotlight

Anika Tylek

Anika Tylek is a senior Biochemistry major with a Pre-Law track and Minors in Healthcare Administration and Biology. She was graduated in May.

Anika has been working with Dr. Arnold for almost one year. In 2021, she maintained human embryonic kidney cells (HEK-293) and performed cell viability assays for compounds for various faculty members and graduate students (Figure 1). The assay measures the amount of ATP present in the cells, which is directly proportional to the number of viable cells in culture. This allowed her to determine the concentration at which different compounds became toxic to cells. Some of the results have been used for the asthma research ongoing in the Arnold Group and have been published in *ACS Pharmacology and Translational Science* titled

“Comparative pharmacodynamic and pharmacokinetic study of MIDD0301 and its (S) enantiomer”.



Anika Tylek

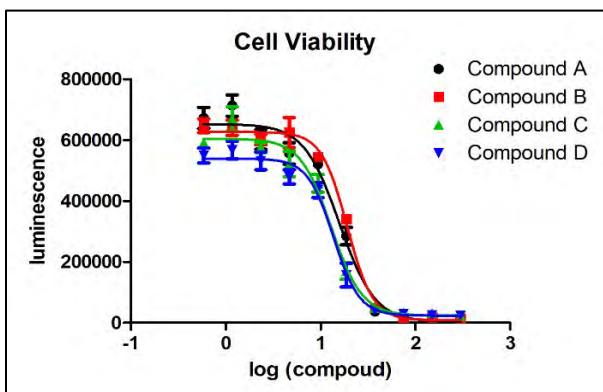


Figure 1. Concentration-dependent cell viability determined with Cell-Titer Glo.

Since January of 2022, Anika has been working with Swiss-Webster mice and performing Rotarod testing under the guidance of graduate students Michelle Meyer and Nicolas Zahn. For these tests, mice were trained by Anika to balance on a rotating rod. Currently, these tests are used to analyze drug effects on motor coordination and balance.

Anika says that she is very grateful to have the opportunity to work with Dr. Arnold and the rest of the Arnold Group members. She has always had a passion for science, with a particular interest in drug development, and its application to medicine. Joining the Arnold Group has allowed her to explore this and gain a deep understanding of the

developmental process of various chemical compounds used in pharmaceuticals. Anika states: “I aspire to extend this passion into the legal field, as I plan to earn a Juris Doctorate degree following the completion of my undergraduate studies.” Anika plans to work in the legal field as a lawyer for medical and pharmaceutical organizations.

Anika was born and raised in Ottawa, Ontario, Canada. Anika is trilingual, speaking English, Polish, and French. She has had the opportunity to travel to over 25 countries. She is a member of the UWM Women’s Tennis team and has been playing tennis since she was 4 years old. Anika is also the current Co-Chair of the Social Media and Marketing Committee in the Student Athlete Advisory Committee for UWM Athletics.

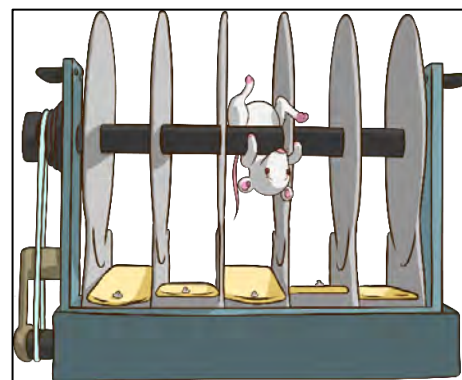


Figure 2. Rotarod experiment to measure the sensorimotor abilities of mice after treatment.



Undergraduate Degrees Conferred 2021/2022

Biochemistry Majors

🎓 Sabaa Abdulrazzaq	🎓 Xhoni Dhamo	🎓 Sana Shakir	🎓 Anika Tylek
🎓 Layall Ajour	🎓 Stephanie Grintjes	🎓 Brianna Simler	🎓 Abigail Van Lara
🎓 Ali Hussain Alyousef	🎓 Karen Gutierrez	🎓 Saige Simonet	🎓 Colby Vang
🎓 Kyle Bailey	🎓 Hector Huizar	🎓 Samantha Slominski	🎓 Jadeleen Vang
🎓 Andrew Beszhak	🎓 Ryan Johns	🎓 Wilson Tarpey	🎓 Kalantha Vang
🎓 Logan Broich	🎓 Jennifer McClanahan	🎓 Logan Teehan	🎓 Jacob Worthing
🎓 Ruben Cisneros	🎓 James Mendez	🎓 Chuefeng Thao	🎓 Sokhna Wyatt-Ngom
🎓 Alesandra Delreal	🎓 Jessica Schoenfelft	🎓 Nhi Tran	

Chemistry Majors

🎓 Larsen Birdsong	🎓 Clara Fendt	🎓 Joshua Harju	🎓 Ian Schermer
🎓 Hannah Boettger	🎓 Justin Giunta	🎓 Samuel Olson	

Chemistry Minors

🎓 Ashlyn Abraham	🎓 A'Jehanna Gaston	🎓 Michael Kneiart	🎓 Jessica Plotkin
🎓 Leah Ackley	🎓 Caitlyn Goetsch	🎓 Megan Lappe	🎓 Shae Lynn Smetana
🎓 Irna Berard	🎓 Allen Hanna	🎓 Alice Lecus	🎓 Alexis Strottman
🎓 Megan Mergin	🎓 Alexandria Heiser	🎓 Lyiba Malik	🎓 Cheyenne Tetzlaff
🎓 Alexis Brown	🎓 Carson Heinze	🎓 Luke Nicol	🎓 Matthew Wagner
🎓 David Deshpande	🎓 Lindsay Hetzel	🎓 Luke Nicol	🎓 Jasmine Weeks
🎓 Ashlin Fuetz	🎓 Tehya John	🎓 Kaitlyn Ollinger	🎓 Alan Young
🎓 Samantha Gallegos	🎓 Hayley Johnson	🎓 Lilly Perkins	

Graduate Degrees Conferred in December 2021



Moneer Arabiyat

DISSERTATION TITLE: Construction of Fluorescent Helicase Fusion Proteins for Use in FRET Studies on Helicase Function and Stoichiometry. **Moneer Arabiyat** graduated with a Master of Science in Chemistry in December 2021. He began his graduate studies at UWM in 2018 after graduating from the University of Notre Dame in South Bend, Indiana. He studied enzymes called helicases, which are motor proteins needed by all cells to access the genetic information stored in DNA and RNA. Helicases use the energy stored in ATP to rearrange DNA or RNA and act as either rings encircling a DNA strand or as monomeric inchworms crawling along the DNA backbone. Moneer used genetic engineering to attach fluorescent proteins to each type of helicase. The proteins will be used in future studies to visualize microscopic helicase movements on DNA and RNA.

DISSERTATION TITLE: Part I: A Concise Synthesis of Microtubule Inhibitor Tryprostatin A and B and Its Analogs. Part II: Brønsted Acid Catalyzed Reactions of Aromatic Ketones with Ethyl Diazoacetate and Its Synthetic Scope. **Khorshada Jahan** completed her dissertation in Synthetic Organic Chemistry under the guidance of Prof. Md. Mahmun Hossain. During her graduate studies, she developed a method to synthesize the microtubule Inhibitor Tryprostatin A and B (a potential anti-cancer agent) and its analogs in only four steps. Simultaneously, as a team member, she worked on several other projects. As an outcome of her research, two papers were published in 2021 and two more are in the pipeline.



Khorshada Jahan

She attended several national and regional conferences during her PhD studies. In 2019, she received 2nd prize for her poster presentation at the 36th H.C. Brown Lecture Series organized by the Department of Chemistry at Purdue University. To advance her knowledge in drug design and development, Khorshada is a postdoctoral fellow in the Medicinal Chemistry Section, National Institute on Drug Abuse (NIDA), which is part of the NIH in Baltimore, MD. She will be working with Dr. Amy H. Newman at NIDA to find more potent compounds/ligands which could serve as safer drugs for the treatment of chronic and severe pain.



Milad Momtaz

DISSERTATION TITLE: Functional Material Systems for Stimuli-Responsive Interference Coloration. **Milad Momtaz** joined Prof. Jian Chen's research group in Spring 2017. His PhD research focused on responsive interference coloration systems for high-performance humidity sensing and chemical vapors sensing. He is the first author of a research article entitled "High-Performance Colorimetric Humidity Sensors Based on Konjac Glucomannan" (*ACS Appl. Mater. Interfaces* 2020, 12, 54104). He earned his PhD degree and graduated at the end of 2021. He is currently senior research engineer at Saint-Gobain Research North America in Northborough, Massachusetts. Saint-Gobain is one of the world's largest building materials companies and manufacturer of innovative materials solutions.

Graduate Degrees Conferred in December 2021

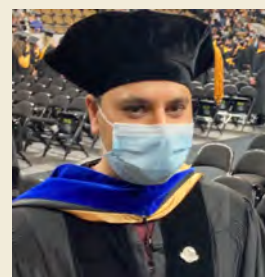


Rashid Roni

DISSERTATION TITLE: Mass Spectrometry Directed Pre-clinical Studies of Asthma Candidate MIDD0301 and Analogs. **Md Shadiqur Rashid Roni** received his PhD degree in Fall 2021 under the direction of Prof. Alexander (Leggy) Arnold. Roni had been working for AQ Chowdhury Science and Synergy (Shimadzu, Bangladesh) before coming to UWM in 2016. He has been an exceptional student focusing on analytical chemistry in life science and has made significant progress to characterize the drug metabolism and pharmacokinetics of our asthma drug candidate MIDD0301. Roni is the author of nine publications. Three manuscripts were published with Roni as first author. He received the Eurofins Analytical Chemistry Award in 2019 and a Graduate

School's Dissertation Fellowship and Sosnovsky Award for Excellence in Graduate Research in 2021. Roni is currently working as an ORISE postdoctoral research fellow at the Bioanalytical Laboratory, Division of Applied Regulatory Science and the Center for Drug Evaluation and Research, Food & Drug Administration in Silver Spring, Maryland.

DISSERTATION TITLE: Protein-Ligand Binding as a Tool to Identify Antiviral Drugs **Rajdeep S. Virdi** received his Doctor of Philosophy in December 2021. Before joining Dr. Frick's lab in 2016, Raj earned a Bachelor of Science from UW-Milwaukee. He studied mainly the interaction of drugs and drug-like molecules with proteins encoded by viruses to assist in the discovery of antiviral drugs. Before the pandemic, Raj focused mainly on enzymes encoded by the hepatitis C virus, but in February 2020 he switched his focus to SARS-CoV-2, the virus that causes COVID-19. He was the first to identify inhibitors of a novel COVID-19 drug target called Mac1. His findings were reported in two high-profile papers published in the journals "Biochemistry" and "SLAS Discovery: Advancing the Science of Drug Discovery." Raj's work has inspired numerous other labs in academia and industry to study Mac1 as a possible target for drugs to treat this and future pandemics.



Rajdeep Virdi



Kevin Wolters

DISSERTATION TITLE: Solid Sorbents for Improved Chemical Separations: Applications in Nuclear Medicine and Environmental Remediation. **Kevin Wolters** completed his dissertation in analytical chemistry in December 2021 under the supervision of Prof. Mark Dietz. Kevin's studies concerned the characterization of improved solid sorbents for the separation and preconcentration of metal ions from aqueous solution and for the removal of toxic dyestuffs from waste streams. During his graduate studies, Kevin worked closely with Shine Medical Technologies (Janesville, WI) on the development of a new process for the preparation of high purity Mo-99 for application in diagnostic nuclear medicine. Several manuscripts describing his

work, including an invited paper for the *Journal of Chromatography*, are now in preparation. Following graduation, Kevin accepted a position as an analytical R&D scientist at Sterling Pharma Solutions in Germantown, where he devises analytical methods to support the API (active pharmaceutical ingredient) development program there.

Graduate Student Spotlight

Mohiminul Islam



Mohiminul Islam

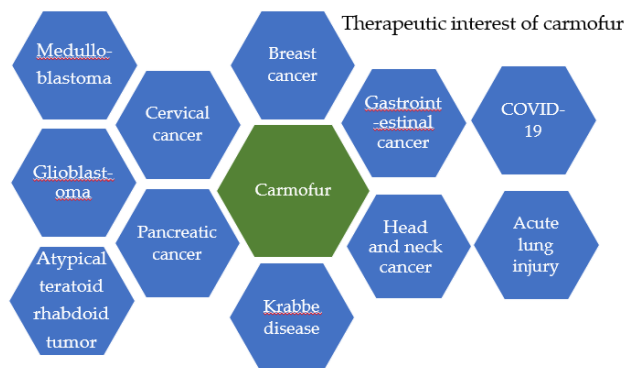
Science and discovery became embedded in Mohiminul's mind when he was a middle school student. Growing up, he learned how the development of a new drug can have tremendous impact on people's lives. Mohiminul says: "I always wanted to become a scientist. When I learned about the incredible opportunity at UWM's Chemistry & Biochemistry Department through the Shimadzu Laboratory for Advanced and Applied Analytical Chemistry, I did not hesitate to join the research group of Professor Mirza and be part of the tradition on making a global impact". The focus of Mohiminul's work in the Mirza lab has been analytical method development and validation of small molecule drugs using liquid chromatography and different mass spectrometric techniques. Analytical method development is an integral part of the drug development cycle, beginning from laboratory synthesis to

pre-clinical and clinical study. One of the molecules that Mohiminul's studied was Carmofur. The research from Mirza group found that this molecule is more effective in killing and suppressing the glioblastoma tumor cell lines compared to the US FDA approved drug Temozolomide. Recently, several studies around the world also reported that Carmofur is therapeutic against various other cancers in addition to other diseases such as Krabbe disease, acute lung injury, COVID-19, etc. However, there is no sensitive and reliable bioanalytical method to quantify this drug molecule *in vivo* to support further pre-clinical and clinical

studies. Mohiminul developed bioanalytical methods to quantify Carmofur and its active metabolite 5-fluorouracil in mouse plasma and other tissues. He also developed imaging mass spectrometric technique to understand the spatial distribution of Carmofur in mouse brain. His work provided a precise understanding of the pharmacokinetics and distribution of Carmofur *in vivo*. His research confirmed that carmofur can cross the blood-brain barrier and therefore, could be a potential drug for the incurable disease glioblastoma. Mohiminul's work has been published in prestigious journals including

one 'Editor's choice' article at *Cancers (Basel)*, and a few more are underway. He presented his work at multiple national conferences and society meetings. Mohiminul states: "Working under the supervision of Professor Mirza was a wonderful and academically rewarding experience for me. I gained an in-depth understanding about the regulatory perspective of analytical techniques which will aid to my future pursuit in serving the drug development efforts".

Besides research, Mohiminul believes in science leadership and volunteering for the cause of research. He was a member of the Department's Graduate Student Council for three years and helped to organize the Annual Research Symposium multiple times. He also volunteered at the Shimadzu laboratory multiple semesters and helped other graduate students learn analytical instrumentation and how to apply it to their research. Mohiminul's remarkable academic performance resulted in multiple travel awards, Chancellor's Awards and the Eurofin's Award in Analytical Chemistry. All together, Mohiminul's contribution is the perfect embodiment to UW-Milwaukee's previous fund-raising campaign slogan of "Made in Milwaukee, Shaping the World".



Graduate Student Spotlight

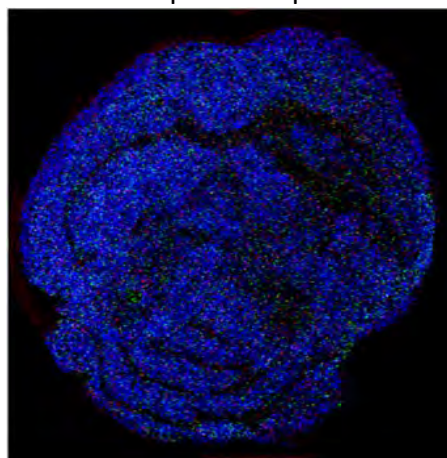
Vilashini Rajaratnam



Vilashini Rajaratnam

Upon graduating with a BSc in Chemistry from the University of Wisconsin-Madison, Vilashini (Vila) Rajaratnam worked as a full-time faculty assistant and taught Analytical Chemistry courses at the University of Wisconsin-Madison. That experience made her “fall in love with Instrumental Chemistry” and sparked her interest to learn about mass spectrometry at UWM. Vila’s interest in mass spectrometry aligned perfectly with the endeavor of Dr. Mirza’s Lab in developing novel technologies using mass spectrometry (MS)-based research with a primary focus on proteomics and drug discoveries for glioblastoma (GBM). GBM is one of the most common and detrimental forms of brain tumor. While there are few FDA-approved chemotherapeutic treatments, the overall survival rate is still poor leading to many studies in Dr. Mirza’s Lab dedicated to developing more effective treatment options. A previous MS-based study on

GBM had identified Acid Ceramidase (ASA1) as a potential therapeutic target and its inhibitor, ARN14988, as a potential chemotherapeutic agent for this disease. Vila’s research focused on understanding the physicochemical properties, pharmacokinetics, and biodistribution of ARN14988 using various MS-based techniques. In Mirza’s lab, Vila performed a series of in vitro assays to evaluate the physicochemical properties of ARN14988. She demonstrated that ARN14988 is lipophilic with about 45% of it remaining unbound to protein in plasma, which may cross the blood-brain barrier through passive diffusion. She then focused on development, validation, and application of LCMS based quantification and MALDI-MS based imaging for ARN14988 in the mouse model.



m/z: 412.20 ± 0.10
Threshold: 0.00 – 1.27

m/z: 285.22 ± 0.10
Threshold: 0.00 – 3.58

m/z: 773.00 ± 0.10
Threshold: 0.00 – 4.74

■ ARN14899
■ Metabolite
■ Endogenous lipid

Like most graduate students, Vila worked as a part-time teaching assistant in the department while working in Mirza’s Lab. She received the Outstanding Teaching Assistant (Laboratory) Award in 2019. This award recognizes teaching assistants who demonstrate exceptional instructional skills while serving in the classroom or laboratory. Additionally, Vila also received a Distinguished Dissertator Fellowship in 2021-2022 which was awarded by the UWM Graduate School to recognize her academic excellence, and the endless hours and discipline she had spent focusing on her research. Vila said: “This opportunity in UWM, especially working with Professor Shama Mirza had made me a better scientist both as an instructor and a researcher. Teaching allowed me to improve my scientific communication skills and doing research in Dr. Mirza’s lab provided me with the valuable hands-on experience when it came to applying my scientific knowledge and expanding it a step further.” She also stated that the key to the success of her research projects has been the Shimadzu Laboratory for Advanced and Applied Analytical Chemistry, where the evaluation of the physicochemical properties, pharmacokinetics, and biodistributions of ARN14988 have heavily relied on the cutting-edge high-resolution LCMS-Q-TOF, triple quadrupole LCMS (QQQ), and imaging mass spectrometer (MALDI-TOF-TOF MS).

2022 Research Symposium

Our annual Research Symposium and Awards Day ceremony was held on Friday, April 22nd. It was organized by the Chemistry & Biochemistry Graduate Student Council (Alexander Drena, Victoria Mandella, Michelle Meyer, Sepideh Rezvanian, and Nurul Setu) who did a fantastic job ensuring all aspects of the event were covered for the fun-filled day.

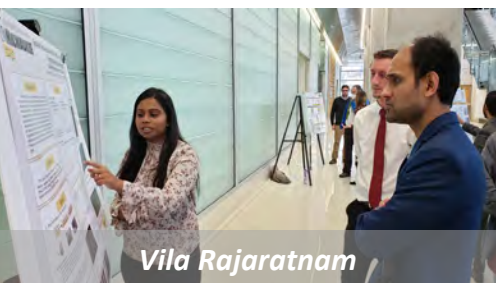
The all-day Research Symposium included two poster sessions that took place in the Kenwood IRC Atrium. This year's poster judges were alumna Dr. Megan Josephine Corby (Abbott Laboratories), Dr. Dian Wang (Marquette University), alumnus Dr. Md Shahnawaz Ali (Millipore Sigma), Dr. Adam Dill (Shimadzu), alumnus Dr. Daniel Knutson (Sterling Pharma), and alumnus Dr. Kevin Wolters (Sterling Pharma).

Undergraduate Student Poster Presenters

- Molly Kiley, Arnold Research Group
- Sarah Swartwout, Arnold Research Group
- Logan Teegan, Aldstadt Research Group
- Anika Tylek, Arnold Research Group
- Bruce Yang, Aldstadt Research Group

Graduate Students Poster Presenters

- Taufeeque Ali, Peng Research Group
- Alexander Drena, Pacheco Research Group
- Trevor Hageman, Schwabacher Research Group
- Ethan Kub, Mirza Research Group
- Victoria Mandella, Pacheco Research Group
- Trevor Melkonian, Silvaggi Research Group
- Michelle Meyer, Arnold Research Group
- Prithu Mondal, Cook Research Group
- Kamal Pandey, Cook Research Group
- Vilashini Rajaratnam, Mirza Research Group
- Sepideh Rezvanian, Cook Research Group
- David Schreurs, Murphy Research Group
- Nurul Setu, Peng Research Group
- Dishary Sharmin, Cook Research Group
- Allison Tomczyk, Blecking Research Group
- Daniel Webb, Arnold Research Group
- Asad Zaman, Peng Research Group



Vila Rajaratnam



Taufeeque Ali



Molly Kiley



Sepideh Rezvanian



Asad Zaman



Victoria Mandella

2022 Awards Day

Following the Research Symposium, we held our annual Award Day Ceremony in CHM 190. Welcoming remarks were given by Dr. Joseph Aldstadt, Department Chair, followed by faculty members speaking about the achievements of each of the award winners.

Undergraduate Awards

- Outstanding Performance in Introductory Chemistry:* Suha Malik
- UWM Chemistry Award to a Chemistry Major for Outstanding Performance in Analytical Chemistry:* Lilly Perkins
- UWM Chemistry Award to a Chemistry Major for Outstanding Performance in Biochemistry:* Kyle Andrew Bailey
- UWM Chemistry Award to a Chemistry Major for Outstanding Performance in Inorganic Chemistry:* Ross Brown
- Peter Kovacic Scholarship for Outstanding Performance in Organic Chemistry:* Elliott Perez
- Chemistry Emeritus Award for Outstanding Junior:* Madeline Rickert
- Outstanding Senior Chemistry Award:* Joshua Harju

Undergraduate Posters

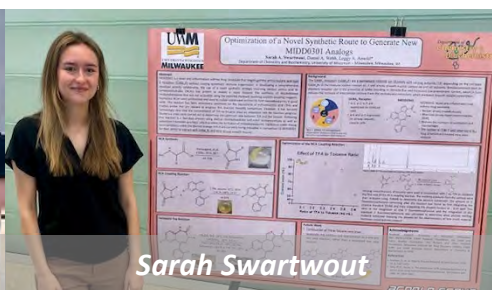
1st Place - *Chemistry Alumni Undergraduate Award:* Anika Tylek

2nd Place - *Chemistry Alumni Undergraduate Award:* Sarah Swartwout

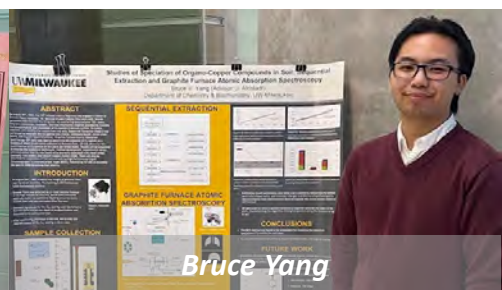
3rd Place - *Chemistry Alumni Undergraduate Award:* Bruce Yang



Anika Tylek



Sarah Swartwout



Bruce Yang

Graduate Awards

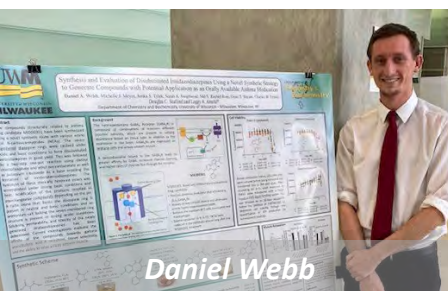
- Teaching Assistant Award for Chemistry Discussions:* Allison Tomczyk
- Teaching Assistant Award for Chemistry Laboratories:* Maija Lee
- Gloria Moczynski Teaching Assistant Award in Chemistry Supplemental Instruction:* Rebecca Dominguez
- Special Teaching Assistant Recognition Award:* Katelyna Williams
- George Sosnovsky Award for Excellence in Graduate Research:* Qi Zhang

Graduate Posters

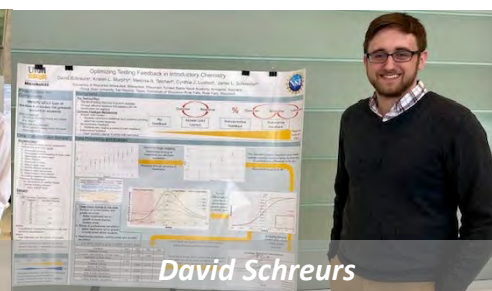
1st Place - *Sterling Award for Excellence in Graduate Research:* Daniel Webb

2nd Place - *Keulks Award for Graduate Research:* David Schreurs

3rd Place - *Chemistry Alumni Graduate Research Award:* Mohammad Mohiminul Islam



Daniel Webb

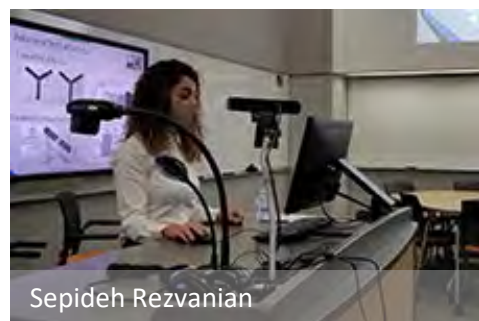


David Schreurs



Mohiminul Islam

The **Milwaukee Institute for Drug Discovery (MIDD) Symposium** was held on January 18th, 2022. The Symposium showcased the cutting-edge science that is part of the MIDD. The day started with a presentation highlighting a decade of MIDD progress presented by Director **Leggy Arnold**. The full story can be viewed at the following link: <https://uwm.edu/drug-discovery/impression-from-the-midd-symposium-2022>.



Sepideh Rezvanian

Neal Korfhage, our amazing, world-class Scientific Glassblower, was featured in two interviews, as well as a feature article in *Discover* magazine:

- Marquette University Television <https://www.youtube.com/watch?v=iDRKjnEX-iU>
- CBS 58 News <https://www.cbs58.com/news/scientific-glassblower-at-uwm-ignites-interest-in-his-craft>
- Discover article <https://www.discovermagazine.com/the-sciences/scientists-still-need-glassblowers>

On January 29th, UWM was host to the annual **UWM Science Olympiad Regional Competition**. The regional event brought together approximately 300 high school students from 14 area schools to compete in 27 science related testing, laboratory focused or building events. Each year the Chemistry & Biochemistry Department hosts multiple events and this year's events included Forensic Science, Chemistry Lab, and Environmental Chemistry. As usual, these events were very competitive as teams have an hour to complete the challenges. This year Marquette High School performed the trifecta with a win in all three events and went on to become the 2021 State Science Olympiad champions. These events would not happen if not for the help of the Chemistry & Biochemistry Department. Science Olympiad would like to thank the Chemistry & Biochemistry department for all the years of supports. Also, thanks go to Kevin Blackburn and Morgan Smith for helping with the set up and resources for these events.

Finding new way to connect: "Virtual Meet & Greet" for Prospective Graduate Students

The Department of Chemistry & Biochemistry held the first ever "Virtual Meet & Greet" for Prospective Graduate Students on April 4th. The virtual event began with a general welcome by Jorg Woehl (Graduate Admissions Subcommittee Chair) and Joe Aldstadt (Department Chair) before moving to individual breakout rooms. The breakout rooms provided a virtual space for the prospective graduate students to meet with current faculty from each division, new faculty starting in Fall 2022 (Drs. Arjun Saha & Jon-Marc Rodriguez), our Graduate Student Council (Alex Drena, Victoria Mandella, Michelle Meyer, Sepideh Rezvanian, and Nurul Setu), and representatives from the Graduate School and the Center for International Education (CIE). Elise Nicks, our Graduate Coordinator, commented: "The event was very well organized, I enjoyed it. Several students commented how it was nice for them to 'put a face to the name' and I enjoyed that as well. The breakout rooms were very active with students moving from room to room to speak with the different representatives. I look forward to participating in future events like this, as it allowed the students another way to connect and to help them with their career decision of making UWM their home." Andrea Joseph from the Center for International Education stated: "It's always nice to be able to meet our international students before they arrive." Molly Wierzbicki, Program Service Representative from the Graduate School, noted: "It was fun. I enjoy speaking with our new students."

The event had 30 participants from nine countries including Bangladesh, Ghana, India, Iran, Nigeria, Republic of Korea, Sri Lanka, and Zimbabwe, as well as domestic students. The Graduate Subcommittee is already planning for the next Virtual Meet & Greet.

UWM hosted a groundbreaking ceremony for the **New Chemistry Building** on Wednesday, January 26th in the Kenwood Interdisciplinary Research Complex [KIRC] lobby. The speakers included UW System President Tommy Thompson, Milwaukee County Executive David Crowley, UWM Chancellor Mark Mone and Letters & Science Dean Scott Gronert. "Chemistry underlies nearly every growth industry, and we know that STEM jobs are growing faster than non-STEM jobs," said UWM Chancellor Mark Mone. "Employers need graduates who have the opportunity to conduct practical research and develop skills to solve problems. We are delighted to begin work on a new, modern chemistry building that will better prepare our students for the multitude of opportunities open to them."



New Chemistry Building, Construction Underway

General contractor VJS Constructions Services Inc. in Oconomowoc has been busy preparing the footings and foundation of the new four-story, 163,400-square-foot chemistry building. The footings and foundation are planned to be completed in June 2022. This leads the way for the Building Enclosure, which is currently

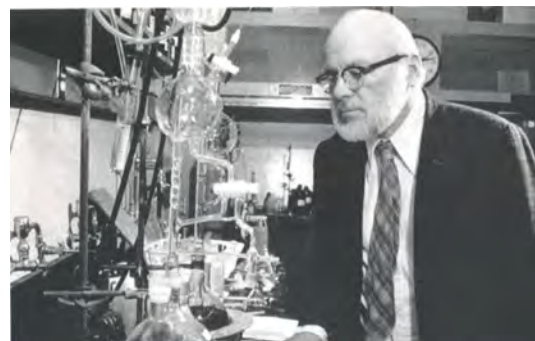


scheduled to be constructed from June 2022 through February 2023. With over a decade of lobbying and planning for a new chemistry building, it's surreal to see the new building construction taking place! The number of hours spent on this project are countless and there is a lot of work to be done in preparation for the move into the new building in Spring of 2024. We are looking forward to the new facility and how it will provide a platform for new research, teaching, and community opportunities enhancing UWM's mission and goals. Construction timeline photos can be viewed at: <https://uwm.edu/chemistry/contact-us/new-chemistry-building-construction-photos/>



In 1968, **Dr. Peter Kovacic** (1921-2022) became Professor of Organic Chemistry and Research Professor at UWM, where he developed our graduate research program in organic chemistry. His research interests during this period emphasized oxidative stress, oxygen radicals, and mechanism of drugs and toxins. He was interested in using humor to support learning and healing and was known for introducing many jokes into his lectures and for a once-a-year tradition of dressing up in Hawaiian shirts and giving a goofy lecture. From 1967 to 1970, he served as a member of the editorial board for *Macromolecular Syntheses* and from 1978 to 1987 as a member of the editorial board for *Review of Chemical Intermediates*. In 1975, he was given the Award of Merit by the Pittsburgh Chemists Club. In 1978 he served as an Exchange Scholar in Yugoslavia for the National Academy of Science. In 1983, he taught and lectured in Yugoslavia as a Fellow in the Fulbright Scholar Program. Also in 1983, he published his book *Fundamental Chemistry of Life and Death*. He was given the U.S. Presidential Research Award by President Lyndon B. Johnson and was named an AAAS Fellow by the American Association for the Advancement of Science. In 1987 he officially retired from UWM, although his teaching, research, and publications were to continue fulltime.

During his lifetime Peter Kovacic published over 450 papers. His research interests were extremely wide-ranging and emphasized interdisciplinary fields: redox metal halides, aromatic substitutions, Bredt's Rule, Adamantanes, N-haloamines, conducting polymers, Poly(p-phenylene), metabolism of drugs and toxins, bioelectrochemistry, cell signaling, oxidative stress, reactive oxygen species, and electron transfer. In his later years, with diminished eyesight, he was especially interested in documenting the application of his unifying theory, based on iminium and electron transfer, to hundreds of fields of medicinal and biochemistry. Dr. Kovacic produced his last published paper, on COVID drugs, in 2020, at the age of 99. He died peacefully in his sleep on March 11, 2022.



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