

Letter from the Chair



Greetings to students, faculty, staff, and especially our alumni. Welcome to our 3rd newsletter.

It is an understatement to say that this was a challenging year...the year of Covid! In May of 2020 we started to allow graduate students back onto campus to

resume research. We had to start slowly with limited capacity (and of course masking), but everyone quickly adjusted to the new normal. I am appreciative that students followed all of the new protocols and we had zero issues in resuming research on-campus. By June, research was back up to speed, with students collecting data, having their cell-lines up and going, and making new compounds.

The department taught in-person labs in July 2020 for students in general and organic chemistry. We were one of the first universities in the US to allow undergraduates back onto campus for in-person instruction. We did so in a safe fashion, and I am very grateful for the grad TAs and faculty that made this possible. Things we learned with our summer teaching were key to us having a successful experience in the fall. Research labs were then back to normal capacity. We had in-person options for all teaching labs and faculty worked hard to have both in-person and on-line experiences for all lectures. We got used to wearing masks while lecturing, converting lectures from Zoom to Panopto, and knowing the difference between the terms quarantine and isolation. Again, I am very grateful and proud of how hard faculty, staff, and grad TAs worked to provide students with as close to a normal experience as possible this year. Everyone worked hard to make sure that the students educational experience over the past year, while being unique, was not compromised or short-changed. We are now in the midst of teaching during the summer under more relaxed (but safe) protocols and we are planning for a closer to normal fall semester.

In addition to all of the changes with how we delivered our courses, we also opened the new ISE building. This was a big move, with principles, general and organic chemistry teaching

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HIGHLIGHTS

- **Next departmental chair announced**
- **Two new faculty hired**
- **Bruce Kowert announces retirement**
- **186 undergraduate majors (27 graduated in May)**
- **48 full-time graduate students (recently graduated 4 Ph.D. students)**
- **38 publications last year (despite COVID)**

labs all having to move over the summer while we were also teaching. The new labs are great and the plan is to renovate the vacated teaching labs in Monsanto Hall so that we have more research lab space. We have just completed installing a 300 MHz NMR in the organic chemistry instrument lab in ISE, with the plan of having sophomore chemistry majors taking organic chemistry lab use the NMR to characterize their reaction products.

This year, I found myself being “thankful” for a lot of people. I was thankful to students for their patience and willingness to help us all navigate the last year. I was thankful to the graduate students for helping us get research back to campus and the important role they played in teaching students in labs over the summer, fall and spring semester. I was also thankful to our staff who were also instrumental in keeping our teaching/research instrumentation up and going and helping faculty and students navigate the year. Given the hands-on nature of chemistry teaching and research, they had to be on campus throughout the year. Finally, I was very thankful for the faculty and all of their hard work. It seemed like we worked 7-days a week last spring and summer to get ready for the fall and we made it to the finish line. I am proud of the work we did!

There are some changes coming to the department for the 2021-2022 academic year. Michael Hankins, former SLU student, will be joining the department as an Assistant Professor. After getting his Ph.D. from SLU, Michael went on to join the faculty at SIU-Edwardsville. We are lucky to have recruited him back to SLU. I will be rejoining the faculty ranks, having finished my second term as chair (6 years total). I am looking forward to getting more involved with research and teaching and 6-years as chair is plenty! We are glad to announce that the new chair will be Alexei V. Demchenko, Ph. D., who was the Curators’ Distinguished Professor in the Department of Chemistry and Biochemistry at University of Missouri – St. Louis since 2001 (<https://www.umsl.edu/chemistry/Faculty/demchenko.html>). Alexei is also currently Chair of the American Chemical Society Carbohydrate Division and will be bringing his large research group to SLU starting September 1. If you get a chance, please welcome Alexei to SLU.

I want to close by recognizing Dr. Bruce Kowert. For those who have not heard, Dr. Kowert retired from SLU at the end of June. But he will not be leaving us. He will still have a lab and office in Monsanto Hall and he will teach a course or 2 a year. Dr. Kowert started at SLU in the Fall of 1977 and has been an invaluable contributor to the department. He has taught general and physical chemistry courses, published over 30 papers, and been a senior leader in the department. I am glad he will continue to remain in the department for quite some time and I look forward to working with him for years to come.

Finally, are you interested in helping to support the department? You can do so monetarily by going to this site: <https://www.slu.edu/alumni-and-donors/give/index.php>, clicking on “Make a Gift,” and checking “Select the fund(s) for your gift”. If you go under the heading of College of Arts and Sciences, you can select the Chemistry Development Fund, and those donations will go directly to our department. If you have specific ideas around donations, or if you want to help in other ways (such as working with students on resume review, etc.), feel free to email me (scott.martin@slu.edu).

Please let us know what you have been up to and if you have any news to share. It was a pleasure being chair of this department for 6 years and I look forward to the new directions we will take over the next few years!



Letter from the Incoming Chair



Greetings to all SLU Chemistry alums, students, faculty, staff, and friends. My name is Alexei Demchenko, and I will be joining the Department of Chemistry as Department Chair on September 1, 2021. I am excited by the opportunity and am confident that I have what it takes to make a dedicated contribution to the upward momentum of the Department and the University. My experiences at research-intensive universities have prepared me well for this role. I was born and educated in Moscow (Russia) where I graduated from the Mendeleev University of Chemical Technology of Russia with a Master's degree in Chemical Engineering and was awarded a Ph.D. in Organic Chemistry by the Russian Academy of Sciences. I then joined Professor Boons' group at the University of Birmingham (UK) as a BBSRC post-doctoral research fellow. When my adviser decided to move to the Complex Carbohydrate Research Center, University of Georgia (USA) I moved with

him as a research associate. In 2001, I joined the faculty at the University of Missouri - St. Louis (UMSL) where I established my own research laboratory, Glycoworld, was promoted through the ranks, and in 2014 was appointed Curators' Distinguished Professor of Chemistry and Biochemistry.

SLU has tremendous opportunity ahead of it based on its role within the local and regional community and economy. Its aspiration is strong, and its goals are clear, requiring energetic and engaged leadership to fulfill them. I bring two decades of faculty and administrative experience at UMSL. My work in the field of carbohydrate chemistry (glycosciences) has resulted in more than 200 peer-reviewed publications, and more than \$10M in federal and private funding. With participation of more than 140 trainees, my research laboratory, Glycoworld, has developed new tools for the synthesis and application of carbohydrates. Twenty one PhD dissertations have been completed, and seven students are currently pursuing doctoral degrees under my supervision. Below, I describe key roles that integrate research and innovation, mentoring, higher education administration, service, and industry collaboration spanning my 20-year independent career.

When I served as Director of Graduate Studies (2007-2011), UMSL Department of Chemistry and Biochemistry set records in increased enrollment and rates of graduation. I focused on improving student success and creating an inclusive environment for underrepresented students including women and minority students. In 2019, I established a multidisciplinary

UMSL Glycoscience Consortium, that serves as a catalyst for accelerating the development and commercialization of glycopharmaeaceuticals. Our aspirations are to meet critical public health needs including advances for treatment in microbial sepsis, new therapeutic treatments for Alzheimer's disease, and personalized anticancer vaccines to expedite the implementation of precision medicine treatment.

In addition to my leadership roles at UMSL, from 2006 I have served in a leadership capacity at National Committees of the American Chemical Society (ACS). Currently, I serve as Chair of the Carbohydrate Division of the ACS. Through controlled, but transparent leadership, I invested in excellence and grew resources to strengthen our award endowments; and worked on establishing unprecedented levels of accountability and diversity. In this role, I served as a champion for helping the CARB division increase equity and inclusion through diversifying the Executive Committee cabinet. My efforts resulted in the launch of collaborative webinars, independent conferences, and appointing new committees that address the needs of membership, underrepresented groups of scientists, and public relations.

I currently serve as President of the U.S. Advisory Committee and the National Representative of the United States for the International Carbohydrate Organization (ICO). By working with fellow presidents across the world, I continue to advocate for how the research enterprise can serve as a catalyst for increasing social and economic mobility. I leverage my leadership experience with the ACS to continuously improve operations, set ambitious goals and targets. To meet specific targets at the ICO, I work with my fellow presidents to look together at the

ICO's long-term goals, collaborate on solutions, and publicly track progress, lifting up notable examples from across the globe.

After 20 years of my involvement with the region, I am aware that SLU is a powerful intellectual catalyst for talent and innovation in the midwestern region. Fundamentally, SLU's values of excellence in research and education align with my own. SLU's commitment to developing high quality talent, building new programs, providing opportunities for research, and creating ideas that drive economic and scientific progress are what attract me to my new role as Department Chair. I am honored by this opportunity and have a clear vision of what is needed to grow as a research university, but I cannot do it alone. While the University is on the right track of providing support for researchers my goal is to make sure that everyone plays the role in achieving our goals either by keeping our backs or providing resources. I believe SLU's Department of Chemistry future will be fueled by strong partnerships across higher education, industry, and agencies that focus on research and innovation. The University is well positioned to lead these partnerships and to serve as a catalyst for social and economic progress in the region. If anybody reading these lines have ideas or means of support, I would be honored to begin the conversation about bright future of the Department of Chemistry at Saint Louis University.

Meet the Faculty



Faculty

Asmira Alagic - Chemistry Education

Christopher Arnatt - Organic

Christy Bagwill - Organic Chemistry Education

Dana Baum - Biochemistry and Graduate Program Coordinator

Paul Bracher - Organic

Steven Buckner - Analytical

Alexei Demchenko - Organic and Department Chair

Sara Drenkhan-Weinaug - Instructor

James Edwards - Analytical

Melissa Hopfinger - Chemistry Education

Michael Hankins - Instructor

Paul Jelliss - Inorganic

Charles Kirkpatrick - Inorganic and Associate Department Chair

Istvan Kiss - Physical

Bruce Kowert - Physical

Piotr Mak - Physical

Scott Martin - Bioanalytical

Ryan McCulla - Organic

Marvin Meyers - Medicinal & Organic

Jennifer Monahan - Analytical

Jamie Neely - Inorganic

Robert Perkins - Chemistry Education

Natalie Schleper - Instructor

Daria Sokic-Lazic - Chemistry Education

John Throgmorton - Instructor

Brian Woods - Chemistry Education

Brent Znosko - Biochemistry and Undergrad Program Coordinator

Emeritus Faculty

Alexa Serfis

Staff

Mike Briscoe - Machinist and Glass Shop

Ian Brown - Principles of Chemistry Laboratory Coordinator

Fahu He - NMR Lab Manager

Angela Jouglaard - Post-Award Specialist II

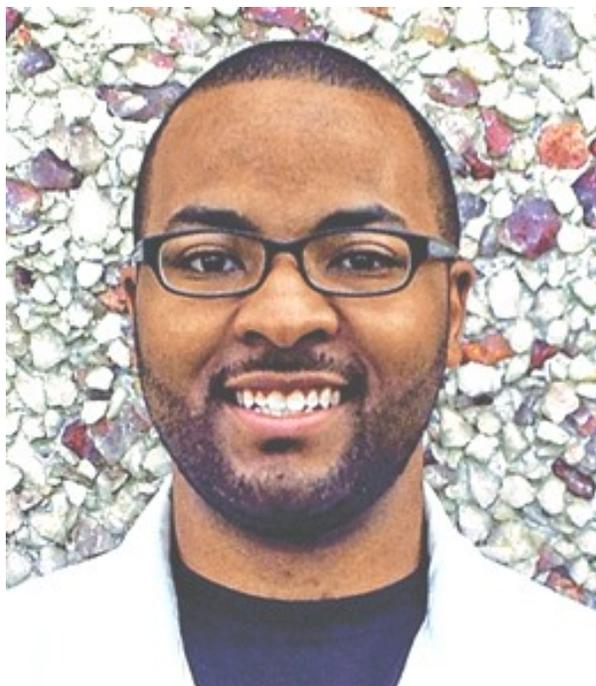
Katie Moorman - General Chemistry Lab Coordinator

Damon Osbourn - Instrument Lab Manager

Kevin Smith - Organic Chemistry Lab Coordinator

Shontae Williams - Administrative Assistant II

Meet the New Faculty



My name is **Michael Hankins**, and I am joining Saint Louis University as an Instructor in the Department of Chemistry. I will also have a joint appointment as the Assistant Dean for Diversity, Equity, and Inclusion in STEM Education for the College of Arts and Sciences. I graduated from Saint Louis University with my PhD in Integrated and Applied Sciences in 2017 and have since been working as an Instructor and Visiting Assistant Professor at Southern Illinois University in Edwardsville. My research interests include nonlinear chemical dynamics and synchronization studies. Through my administrative role, I plan to work on efforts to help with the retention and recruitment of students from under-represented communities (minority, low-income, etc.) to Saint Louis University. I have benefitted from the Jesuit education at SLU and want to be an example of how students can excel given the right resources and opportunities. I look forward to being a part of the SLU community again! Go Billikens!



Melissa Hopfinger completed her undergraduate education at Rockhurst University in Kansas City, MO, graduating in 2014 with a B.A. in Spanish and a B.S. in Chemistry, Mathematics, and Physics of Medicine. She earned her Ph.D. in Chemistry at Saint Louis University under the guidance of Dr. Brent Znosko studying the effects of solution properties and nucleotide modifications on nucleic acid structure and stability. Between her undergraduate and graduate education, she spent a year abroad at Ocer Campion Jesuit College in Gulu, Uganda, teaching math, physics, computer, and English classes. In Fall 2020, she joined the SLU faculty with primary teaching roles in the General Chemistry lecture and lab sequence. Her research interests lie at the intersection of physics, chemistry, and biology, utilizing molecular dynamics and quantum mechanics to investigate the structures and energetics of biological macromolecules.

Bruce Kowert Announces His Retirement



After forty-four years in the SLU chemistry department, Dr. Bruce Kowert retired at the end of the 2021 spring semester. His academic journey to the corner of Grand and Lindell started at the University of Texas at Austin, where he did his undergraduate and graduate studies; his Ph.D. mentor was Allen J. Bard. He then did postdoctoral work at the Physical Chemistry Institute of the University of Basel in Switzerland, under the direction of Fabian Gerson, and in the chemistry department at UCLA, under the direction of Daniel Kivelson. He taught at Michigan State for two years before starting at SLU in the fall of 1977.

Dr. Kowert taught physical, analytical, and general chemistry at SLU. The physical chemistry courses included the two-semester undergraduate sequence, Mathematical Techniques in Chemistry, and graduate courses in quantum chemistry, symmetry and spectroscopy, and magnet-

ic resonance. The course he taught most often was the second semester of physical chemistry, during which he and his microscopic accomplice, the particle in the box, did their best to introduce students to quantum mechanics. He saw the tremendous growth in the chemical literature and the means by which it is searched while teaching Introduction to the Chemical Literature in the falls of 1979, 1998, and 2016-18.

Dr. Kowert's general research area was the study of molecular motion in liquids. He used electron spin resonance to study the rotational diffusion of transition metal complexes and nitroxides. Capillary flow techniques were used to study the translational diffusion of oxygen, transition metal complexes, and hydrocarbons; the hydrocarbons included alkenes, alkynes, aromatics, alkylbenzenes, and buckminsterfullerene. The results he obtained with his undergraduate and M.S.(R) research students were reported in 28 papers. The students made 45 oral and poster presentations at local, regional, and national meetings. Dr. Kowert gave 13 invited oral presentations, including a series of five lectures to the Department of Chemistry at Philipps University, Marburg, West Germany and 30 contributed oral and poster presentations.

Some molecules were studied by multiple techniques. The results describing the rotational and translational motion of the planar, paramagnetic bis(maleonitriledithiolato)nickel anion, $\text{Ni}(\text{mnt})_2^-$, were reported in a series of seven papers in the Journal of Physical Chemistry, the Journal of Physical Chemistry B, the Journal of Magnetic Resonance, and Chemical Physics. The $\text{Ni}(\text{mnt})_2^-$ ion is part of a re-

dox series that also contains $\text{Ni}(\text{mnt})_2^{2-}$ and $\text{Ni}(\text{mnt})_2^{3-}$. The rate constant for the electron transfer reaction between $\text{Ni}(\text{mnt})_2^-$ and $\text{Ni}(\text{mnt})_2^{2-}$ was determined using ^{13}C NMR and reported in *Inorganic Chemistry*. The trianion, $\text{Ni}(\text{mnt})_2^{3-}$, also is paramagnetic and its rotational motion was compared with that of $\text{Ni}(\text{mnt})_2^-$ in the *Journal of Physical Chemistry B*. The slower reorientation of $\text{Ni}(\text{mnt})_2^{3-}$, prepared by reducing $\text{Ni}(\text{mnt})_2^{2-}$ with potassium in diglyme, was attributed to ion pairing. A computational study, carried out with Dr. Chuck Kirkpatrick and published in the *Journal of Computational Chemistry* showed that $\text{Ni}(\text{mnt})_2^{3-}$ does interact preferentially with the solvent-coordinated potassium cations. It also predicted, in agreement with their known structures, that $\text{Ni}(\text{mnt})_2^-$ and $\text{Ni}(\text{mnt})_2^{2-}$ were planar; $\text{Ni}(\text{mnt})_2^{3-}$, however, was predicted to be nonplanar, a result that has yet to be tested experimentally.

Dr. Kowert has been the department's liaison to Pius Library for over thirty years. He was in charge of the Marcus Award, the department's award for excellence in undergraduate research for the same length of time. Twenty-eight of his 53 undergraduate research students participated in the Marcus competition; seven were winners. At the college level, he was the Arts and Sciences representative on the University Rank and Tenure Committee for four years.

While "officially" retiring, Dr. Kowert will be keeping his office and one-room basement lab; he intends to add more papers to his CV.

In addition to activities mentioned above, Dr. Kowert and Dr. Harold Dieck had a lengthy collaboration on a project that the University classified as neither teaching, research, nor service; they ran the football

pool. The Pool, as it was known, consisted of picking the winner (against the spread) of each week's NFL games. First place was 75% of the entry fees (\$1 per entry); second place was 25%. The spreads were determined by Dr. Kowert, who also provided commentary on past Pools and departmental matters. Dr. Dieck used his subtle, understated means of non-confrontational persuasion to induce students and faculty to enter, after which he compiled the entries. The Pool's prominence on campus was highlighted by its mention in a homily given at St. Francis Xavier College Church in the summer of 1999. The occasion was the wedding of Dr. Vincent and Sue Spaziano. He was the chair of the chemistry department; the homily was given by Fr. Ted Vitali, C.P., the chair of SLU's philosophy department. During the homily, Fr. Vitali, a Pool participant, was extolling the collegiality Dr. Spaziano promoted in the department and said, "In chemistry, they get along with each other and do a good job because of Vince's leadership but they don't write books, they make books. Bruce and Harold run their Pool..." The Pool's two operators, seated in the nave, were taken aback and honored at the unexpected mention.



Faculty News

The faculty of Saint Louis University's Department of Chemistry are highly regarded in their fields. They are known for their extensive research across a diverse group of specialties that include the areas of analytical, biochemistry, inorganic, organic, and physical chemistry.

Chris Arnatt - The Arnatt lab has graduated three graduate students: Dr. Chelsea DeLeon, Michael Green, and Nick Latzo. We continue to work the Edwards lab on developing novel isotopic tags for metabolomics. Our collaboration with the Salvemini lab (SLU Pharmacology and Physiology) has been very successful in finding compounds that can inhibit neuropathic pain *in vivo*, and we are looking forward to developing these into potential therapeutics.

Christy Bagwill - This past year has been a busy one for us in the organic chemistry labs. Excitedly the ISE building opened, and we moved all organic labs over from Monsanto. We were able to add a third lab space, which is needed because of recent enrollment increases. The space provides a state-of-the-art experience for students in organic chemistry where two students share a six-foot hood. Technology was incorporated into the rooms so students could easily see announcements, diagrams, or watch demonstrations from the instrument room. Speaking of instrument room, we now have 9 GC's and 3 IR instruments for students to use to characterize their products, and just last month a 300 MHz NMR was installed. We expect to develop some new labs which will provide a more hands-on experience to analyze products using the NMR. We look forward to updating you next year on future developments.

Dana Baum - The Baum lab is excited to be part of a NASA Interdisciplinary Consortium for Astrobiology Research (ICAR) award that was selected for funding this past year! It expands upon our on-going collaboration with the Burke Group at the University of Missouri and has us partnering with researchers at 6 other institutions to explore the limits of RNA's catalytic abilities. We are also collaborating with researchers in Biology and Biomedical Engineering to explore how aptamers can be used to facilitate wound healing and are a part of the SLU Institute for Drug and Biotherapeutic Innovation (IDBI). We are still interested in small molecule detection using nucleic acids and are now working with a class of pharmaceutical targets. You can follow our progress on Twitter (@BaumLabSLU) and Instagram (baumlabslu) and at our new internet home: www.danabaumlabs.com

Paul Bracher - In 2020, the Bracher Group weathered the COVID-19 pandemic in style, with Zoom group meetings and socially distant experimentation. We celebrated the sunset of the NSF-NASA Center for Chemical Evolution with a presidential symposium at the

ACS Spring 2021 National Meeting. Our ongoing work on possible origins of life on Saturn's moon Titan will be supported with the award of a NASA FINESST fellowship to Steven Skaggs, a G2 in the group. Outside of the laboratory, the Bracher Family welcomed twin boys, Mark Octavian and John Augustus, in June 2020.

Melissa Hopfinger - Melissa Hopfinger joined the department as a faculty member in August 2020 and has been primarily focused on teaching the General Chemistry sequence lectures and labs. She has been working on re-shaping the General Chemistry for Majors Lab with Daria Sokic-Lazic and has been collaborating with an interdisciplinary team of STEM faculty to develop a STEM preparatory program (in its pilot year this summer) that aims to better prepare incoming freshmen for success in their introductory STEM courses at SLU.

Chuck Kirkpatrick - Chuck Kirkpatrick continued to work with students in the Znosko group on identifying and classifying motifs in RNA structures, and also on determining interaction energies between RNA base pairs. In addition, he is working with graduate students in other groups on single molecule calculations of organic and inorganic compounds.

Istvan Kiss - With graduate student Jorge Luis Ocampo Espindola, the Kiss group published a paper in Proceedings of the National Academy of Sciences USA on "Random heterogeneity outperforms design in network synchronization" (<https://doi.org/10.1073/pnas.2024299118>). Dr. Kiss also organized two virtual minisymposia, one at the 239th Meeting of the Electrochemical Society, and another at the SIAM Conference on Applications of Dynamical Systems.

Piotr Mak - The Mak lab welcomes new graduate student Jacob Mitchell, postdoctoral fellow Dakota Grote, and undergraduate researcher Samy Mansour. In February, graduate student Rachel Uhler successfully defended her M.S. thesis and accepted a position in one of the fast-growing biotechnological company in the Cortex Innovation District. Despite the difficulties imposed by the Covid pandemic, we published our research data in several journals, including Inorganic Chemistry, Molecules, and Journal of Physical Chemistry B. Sam Snyder, our 4th-year graduate student, received SLU Chemistry Department Teaching Award. Dr. Mak

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was invited to present his research at two prestigious international conferences, ICPP-11, International Conference on Porphyrins and Phthalocyanines, and ICAVS-11, International Conference on Advanced Vibrational Spectroscopy.

Scott Martin – The Martin Research group had a good year, performing research with masks and social distancing. Beth Hayter (starting her 5th year), Emily Currens (starting her 3rd year), Major Selemani (starting year 2), and Morgan Ward (will be a senior undergrad) were joined by a new graduate student, Khamhbawihum Cenhrang (who goes by Kham) and a new undergraduate student, Molly Melzer. We had a few departures, with Logan Robart receiving his masters degree in the spring of 2021 and Alesia Gjoni graduating with her BS in chemistry. Morgan won the department's Outstanding Junior Award and Alesia received this years Marcus Award, so they both continued the group tradition of winning awards! Dr. Andre Castiaux (Lead Engineer for our new SLU Center for Additive Manufacturing and former post-doc) played a big role with everyone's project. He will be starting a new job at BASF in the fall. Now that I have finished my time as Department Chair, my goal is to spend more time with students, and I will be doing a sabbatical in the spring 2022 semester.

Ryan McCulla - The McCulla group continues to focus on photodeoxygenation reactions and the effect of these reactions on biological systems. In 2020-2021, Satyanarayana Murthy Chintala and Ankita Isor finished their Ph.D's. Murthy took a postdoctoral research position at Washington University School of Medicine in the Anesthesiology Department, and Ankita will be moving on to New York to work in a consulting firm.

Marvin Meyers - Despite the challenges of COVID, the past year has been a good one for the Meyers lab. Major research efforts on drug discovery against the parasite *Cryptosporidium* are paying off with lead compound SLU-2633 showing potent efficacy in animal models, forming the basis for a patent application and several Zoom presentations. A new NIH R33 project with Chris Huston at the University of Vermont launched in January to optimize two additional series of anti-crypto compounds that we've been studying. A long standing project collaboration with the Tavis lab at SLU School of Medicine on Hepatitis B virus was rewarded with a NIH R01 in December in order to optimize compounds for this disease. In June, an antifungal drug discovery collaboration with Damian Krysan at the University of Iowa was funded as an R21. Two seniors in the lab graduated this May: Andrew van Nispen and Emmy Philo, both are headed for medical school. Over the past year, we gained first year grad student Samantha Brosend (a former summer SLU REU research assistant), juniors Hannah Peek, Aaron Burroughs and Miguel Campos, postdoc Dr. Nick Jentsch, and two summer students, Nicole Shapiro and Diana Urbina.

Jennifer Monahan - In 2021 Dr. Monahan was awarded SLU's *William V. Stauder, S.J. Award for Excellence in Undergraduate Teaching in the Natural Sciences*. This, combined with COVID changes to the 2021 graduation ceremonies, meant graduating seniors in chemistry/biochemistry had to listen to her one-more-time as she served as a speaker at the 8:30am-CAS PreCommencement ceremony. She wished them luck! <https://www.slu.edu/commencement/2021.php> On a related note: COVID-pandemic or not, it is impossible to teach hands-on Quantitative Chemistry lab skills remotely. So in Fall 2020, Analytical-1 Lab courses spread out and ran with a full, albeit socially distanced, schedule. If you hated wearing goggles in lab, imagine wearing goggles AND a face mask for a full year. Our sophomore majors really stepped up their game under exhausting circumstances.

Brent Znosko – Dr. Znosko continues to teach biochemistry courses, run a research lab investigating the stability and structure of nucleic acids, and serve as the department's undergraduate program coordinator. In the spring of 2020, Dr. Miranda Adams successfully defended her thesis and took a job as a research analyst with Numerof and Associates. In the summer of 2020, Dr. Melissa Hopfinger successfully defended her thesis and accepted an assistant professor position at SLU and now teaches general chemistry. In July, Sebastian Arteaga joined the group. He joined graduate students Sharear Saon, Megan Rudolphi, and Bree Bozsoki in the group. In May, undergraduate researcher Jon Bostic graduated from SLU. He will be working in a clinical setting while applying to medical school. In the past year, we published two articles, and the lab's NIH grant that funds our RNA thermodynamic and structural work was renewed. The lab's research was cited 74 times in 2020, including in review articles published in *Current Opinion in Chemical Biology*, *Chemical Reviews*, *International Journal of Molecular Sciences*, and *Russian Journal of Genetics*. Dr. Znosko gave a virtual seminar for the University of Colorado-Denver. We were very excited to hear that some of our lab's thermodynamic data was used by Moderna during the design of their COVID-19 mRNA vaccine. When he's not working, Dr. Znosko is watching his boys play baseball, basketball, football, flag football, and martial arts (yes, it's tiring).

FACULTY PUBLICATIONS

Alagic

C., DeLeon, T., Tabibi, A. Alagic. Characterization and Electrochemical Analysis of Microelectrodes and the Interface with a Fabricated 3D-Printed Microfluidic Chip in an Upper-Division Analytical Course. *J. Chem. Ed.* 2020. doi.org/10.1021/acs.jchemed.oco0427

T., Tabibi, J., Norys, A. Alagic. Designing and Optimizing 3D Printed Microfluidic Devices Coupled with Electrochemical Detection for use in Undergraduate Labs. *Chemical Educator*. 2020.

Arnatt

Lu, A. S.; Rouhimoghadam, M.; Arnatt, C. K.; Filardo, F. J.; Salem, A. K. Proteolytic Targeting Chimeras with Specificity for Plasma Membrane and Intracellular Estrogen Receptors. *Molecular Pharmaceutics* 2021, 18, 1455-1469.

Isor, A.; O'Dea, A. T.; Petroff, J. T.; Skubic, K. N.; Grady, S. F.; Arnatt, C. K.; McCulla, R. D. Synthesis of triphenylphosphonium dibenzothiophene S-oxide derivatives and their effect on cell cycle as photodeoxygenation-based cytotoxic agents. *Bioorganic Chemistry* 2020, 105, 104442-104450.

DeLeon, C.; Wang, D. Q.-H.; Arnatt, C. K. G Protein-Coupled Estrogen Receptor, GPER1, Offers a Novel Target for the Treatment of Digestive Diseases. *Frontiers in Endocrinology* 2020, 11, 843-848.

Braden, K.; Giancotti, L. A.; Chen, Z.; DeLeon, C.; Latzo, N.; Boehm, T.; D'Cunha, N.; Thompson, B. M.; Doyle, T. M.; McDonald, J. G.; Walker, J. K.; Kolar, G. R.; Arnatt, C. K.; Salvemini, D. GPR183 -oxysterol axis in spinal cord contributes to neuropathic pain. *Journal of Pharmacology and Experimental Therapeutics* 2020, 375, 367-375.

(Featured cover article)

DeLeon, C.; Wang, H. H.; Gunn, J.; Wilhelm, M.; Cole, A.; Arnett, S.; Wang, D. Q.-H.; Arnatt, C. K. A novel GPER antagonist protects against the formation of estrogen-induced cholesterol gallstones in female mice. *Journal of Lipid Research* 2020, 61, 767-777.

Wang, H. H.; Bari, O. D.; Arnatt, C. K.; Liu, M.; Portincasa, P.; Wang, D. Q.-H. Activation of a novel estrogen receptor GPR30 enhances cholesterol cholelithogenesis in female mice. *Hepatology* 2020, 72, 2077-2089.

Petroff, J. T.; Isor, A.; Chintala, S. M.; Albert, C. J.; Franke, J. D.; Weinstein, D.; Omlid, S. M.; Arnatt, C. K.; Ford, D. A.; McCulla, R. D. In vitro oxidations of low-density lipoprotein and RAW 264.7 cells with lipophilic O (3 P)-precursors. *RSC Advances* 2020, 10, 26553-26565.

Petroff, J. T.; Grady, S.; Arnatt, C. K.; McCulla, R. D. Dibenzothiophene Sulfone Derivatives as Plasma Membrane Dyes. *Photochemistry and Photobiology* 2020, 96, 67-73.

Bracher

Febrian, R.; Roddy, J.P.; Chang, C.H.; Devall, C.T.; Bracher, P.J. "Removal of Paramagnetic Ions Prior to Analysis of Organic Reactions in Aqueous Solutions by NMR Spectroscopy." *ACS Omega*, 2021, 6, 14727-14733. DOI: 10.1021/acsomega.9b02610

Kroger, S.M.; Hill, L.; Jain, E.; Stock, A.; Bracher, P.J.; He, F.; Zustiak, S.P. "Design of Hydrolytically Degradable Polyethylene Glycol Crosslinkers for Facile Control of Hydrogel Degradation." *Macromol. Biosci.* 2020, 20, No. 2000085. DOI:

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2020 – 2021 Department Awardees

PhD Awards

Winner

Ankita Isor

Award

Carol M. and Joseph R. Franks Graduate Award in Chemistry

MS Awards

Winner

Emily Currens

Award

CRC Press Chemistry Achievement Award

Ali Parvez

Royal Society of Chemistry Certificate of Excellence

Bree Bozsoki

American Institute of Chemists Student Award

Senior Awards

Winner

Conor Honan

Award

James D. Collins Award for Student Excellence

Allyson Stanley

CRC Press Chemistry Achievement Award

Jon Bostic

Royal Society of Chemistry Certificate of Excellence

Minh Pham

American Institute of Chemists Student Award

Conor Honan

Senior Legacy Symposium

Alesia Gjoni

Senior Legacy Symposium

Jon Bostic

Senior Legacy Symposium

Junior Award

Winner

Morgan Ward

Award

ACS Outstanding Junior Chemistry Award

Additional Awards

Winner

Roe Dar

Award

ACS Division of Organic Chemistry Undergraduate Award

Kathleen Rosfelder

ACS Undergraduate Award in Analytical Chemistry

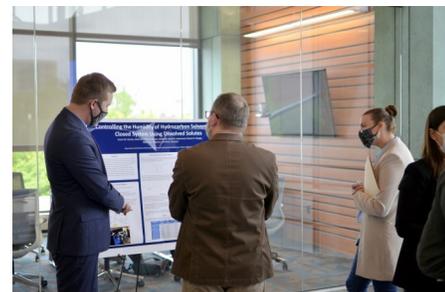


Ethan Wetter	ACS Undergraduate Award in Physical Chemistry
Gunder Reese	ACS Division of Inorganic Chemistry Undergraduate Award
Sydney Lahm	Outstanding Freshman Chemistry Student
Conner Weyer	Hugh B. Donahue Award for Excellence and Achievement
Alesia Gjoni	Marcus Award Winner

Scholarships

Winner

Winner	Award
Caroline Christ	Spaziano Scholarship
Kathleen Rosfelder	Giminez Upperclass Chemistry Scholarship
Grace Murphy	Rubber Group Scholarship
Jade Samanta	Barber Scholarship



Commendable Award to the SLUE ACS Student Chapter

Additional Awards

Dr. Marv Meyers	Elected to the National Academy of Inventors as a Senior Member
Dr. Jennifer Monahan	William V. Stauder, S.J. Award for Excellence in Undergraduate Teaching in the Natural Sciences
Sam Snyder	SLU Chemistry Department Teaching Award
Peter Maness	SLU Chemistry Department Teaching Award
Corey Richards	SLU Dissertation Fellowship
Jack Samuelian	1st Place—Physical Sciences Graduate Division at SLU Sigma Xi Research Symposium
Megan Rudolphi	2nd Place—Physical Sciences at SLU Graduate Student Association Research Symposium



Gamma Sigma Epsilon Inductees:

Ethan Bayer
 Conor Honan
 Minh Pham
 Zhaoyi Li



Alumni Update

Mark Ryan (BA Chem '93): I am married to Ann (Ladd) Ryan (Med '99) and live in Denver, CO with two kids. I've spent my time in coatings and plastics and for the past 21 years worked for The Shepherd Color Co. which specializes in inorganic colorants. I'm the Global Marketing Manager and some of the projects I've worked on are YInMn Blue, IR-reflective pigments to help buildings save energy, and other specialty applications.

Tony Dutoi (BS Chem '99): Tony is now an Associate Professor of Chemistry at the University of the Pacific, in Stockton CA. He continues to do research in electronic structure theory, which he fell in love with some 20 years ago at SLU, while working as an undergrad with Ronald See. He is married to another lovely chemist and has two children (5 and 8), upon which he also performs psychology experiments (or is it the other way around?). He mastered online teaching just in time to stop, blessedly.

Cori Jenkins Root (BS Chem '10): Despite how rough 2020 was for most people, I had a pretty good year. I had a little girl in October (see picture at right) and received my first major grant from NSF to study sulfur-based materials for waste-water treatment and adhesives development.



Cori Jenkins Root

Angela Hoynacki Lewis (BS Biochem '11): Following graduation with a B.S. in Biochemistry, Angela Lewis (previously Hoynacki) completed medical school at SLU, a pediatrics residency at Indiana University, and a neonatal-perinatal medicine fellowship at Washington University in St. Louis. Her current research focuses on the causes of necrotizing enterocolitis, a neonatal gut disease. She is happy to be returning to the SLU community as an Assistant Professor in the Department of Pediatrics, Division of Neonatal-Perinatal Medicine.

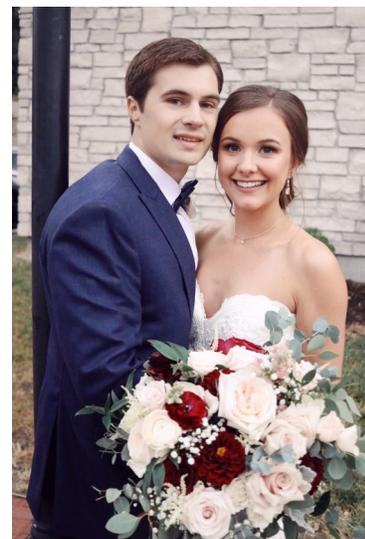
Anit Behera (BS Biochem '12): I will be finishing up my 2nd year of neurology residency at the University of Chicago next month. I completed my first year of residency in internal medicine (2019-2020) at the University of Chicago NorthShore program. Otherwise, I will be applying for fellowships this year and continuing my 3rd and 4th years of residency.

Daniel Pike (BS Biochem '14): I just started my last year in the MD/PhD program here at SLU. After working in Dr Dave Ford's lab in the Department of Biochemistry and Molecular Biology for a few years, I finished my PhD work and defended my dissertation in April of 2020. I'm getting ready to start applying into Pediatrics for residency, and I will graduate in May of 2022. On a personal note, my wife and I were married at College Church in October of 2020. We met at SLU during undergrad, so we were happy to keep the Billiken tradition going.

Caroline Esch (MS Chem '14): I'm still in Cheyenne, Wyoming where I landed after graduation. I work for HollyFrontier and the refinery here has recently stopped running crude oil and is in the process of retrofitting units to produce renewable diesel from soybean oil and tallow. We are also updating the lab to be able to support the new processes and products. Outside of work I coach the high school mountain bike team here as well as various mountain bike clinics.

Sebastian Chirayil (BA Biochem '18): I just finished my first year of medical school at Loyola Stritch School of Medicine and will be going into my second year this upcoming Fall. This Summer I am doing clinical research at Loyola University Medical Center as a part of the STAR Program with an NIH T35 training grant supported by the National Heart Lung and Blood Institute.

McKenna Wilhelm Losby (BS Chem '18): This past October I got married (see picture at right), hence the last name change from Wilhelm to Losby. I continue to work on my PhD in biochemistry at Washington University. In December I proposed my thesis titled *Targeting the Estrogen Related Receptor for the Treatment of Mitochondrial Dysfunction in Heart Failure*.



McKenna Wilhelm Losby

We would love to hear from you. Please fill out this brief form here:

<https://forms.gle/5SNpw8Zirm3WegcM8>

Alumni Visits

For any alumni who want to come back to the Department for a visit, just send the chair or any faculty member you know an email, and we would be happy to show you around and have you meet some of our current students.

Alumni Support

Are you interested in helping support the department? You can do so monetarily by going to this site: <https://www.slu.edu/alumni-and-donors/give/index.php>, clicking on “Make a Gift”, and checking “Select the fund(s) for your gift”. If you go under the heading of College of Arts and Sciences, you can select the Chemistry Development fund and those donations will go directly to our department. If you have specific ideas around donations or if you want to help in other ways (such as working with students on resume review, etc.) feel free to contact the Department Chair (alexei.demchenko@slu.edu).

Previous Newsletters

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https://www.slu.edu/arts-and-sciences/chemistry/pdfs/2020_newsletter.pdf