



A NOTE FROM THE DEPARTMENT HEAD

Dear Alumni and Friends of the Chemistry and Biochemistry Department

We hope our annual newsletter finds you well. Once again, it's time to reflect on the events in our department over the past year. In January 2021, we gradually began transitioning to "normal" operation after a year of uncertainty. Suffice to say that things have not been back to normal ever since and they may not be for a while. Our brilliant faculty developed creative ways to teach while making sure students observed physical spacing protocols. Some introductory classes and labs moved entirely online while others adopted a combination of online and traditional/seated modes. Other faculty developed creative ways of shortening labs in such a way that enabled labs to be done in a fraction of the time. Over the past year, the virtual learning period has been an expansion of our classroom technology and ability to broadcast, which has greatly expanded the reach of our seminars.

Dr. Tuhina Banerjee joined our faculty as an Assistant Professor of Biochemistry in fall 2021. She graduated with a Ph. D Degree from the Indian Institute of Technology and was previously at Pittsburg State University. Additionally, Scott Curtis joined our department as Laboratory and Stores Supervisor. He took over from Jonathan Hardin who left the University. Scott is a proud alumnus of our department having graduated with bachelors and Masters Degrees. We wish Tuhina and Scott the best in their new assignments. We also congratulate Dr. Fei Wang and Dr. Keiichi Yoshimatsu who were granted tenure and promoted to Associate Professor, and Dr. Nikolay Gerasimchuk who was promoted to Distinguished Professor.

Despite enormous challenges due to the COVID-19 pandemic, 2021 was another very productive year. We changed the name of our department to "Chemistry and Biochemistry

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Department” to better reflect and highlight our current programs. We expect the name change to lead to increased visibility of biochemistry at Missouri State University. Faculty and students published 33 peer reviewed publications, 1 book chapter and 1 patent application. Faculty brought in almost 1 million dollars in individual and collaborative external grants. Twenty nine students graduated with Bachelors Degree while eight graduated with a Masters Degree. Undergraduate student Ian Sayers and Graduate student Dane Wagner were awarded Environmental Chemistry Award from the American Chemical Society. They both work in Dr Cyren Rico’s lab where they investigate the effects of widespread soil contaminants on plants. Graduate student Megan Prado won 2nd place in the University-wide 3 Minute Thesis Competition. Congratulations to all for these achievements in these challenging times.

In closing, we thank our alumni and friends for their continued support. We look forward to strengthening these relationships. I hope 2022 will be prosperous to you, both personally and professionally.

Adam Wanekaya.

New Faculty and Staff



Introducing Dr. Tuhina Banerjee, Assistant Professor of Chemistry

Dr. Banerjee was born and brought up in Varanasi, one of the oldest cities in India. While pursuing her Masters in Biochemistry, Dr. Banerjee developed a keen interest in protein folding problems. When she joined Indian Institute of Technology-Bombay (IIT-B) to pursue her doctoral degree, she was particularly interested in Dr. Kishore’s research aimed at characterizing protein folding intermediates. During this time, she used calorimetric and spectroscopic approaches to gain mechanistic insights on equilibrium and kinetic intermediates of several proteins. Her work highlighted that most of these intermediates in various proteins share similar thermodynamic signatures.

As a postdoctoral scholar at Dr. Teter’s lab at University of Central Florida, Orlando, Dr. Banerjee worked on several AB-type protein toxins including *cholera toxin*, *pertussis toxin*, and *ricin* for a deeper understanding of cellular and molecular mechanisms of their pathogenicity. As a Research Scientist at Pittsburg State University, she has developed several innovative approaches involving biomimetic nanoparticles, antigenically equivalent magnetic reporter viruses and cell-based assays utilizing magnetic relaxation nanosensor technology.

Dr. Banerjee has a strong passion for teaching and strongly believes in hands-on learning experiences. She has taught graduate and undergraduate biochemistry courses at Pittsburg State University. In August, 2021, she joined Missouri State University where she plans to continue building her love for research and teaching.

The research focus of Dr. Banerjee’s lab is to apply an integrative approach of biochemical, biophysical and nanotechnology for mechanistic understanding of the fibrillation of alpha synuclein, a known biomarker for Parkinson’s disease. Beyond the classroom and research, Dr. Banerjee likes to travel and experience other cultures.



Introducing Scott Curtis, Laboratory & Stores Supervisor

Scott is a native of Springfield, Missouri, and a proud alumnus of Missouri State University (BS summa cum laude with honors 2011, MS 2013). After two years as an instructor in the Chemistry Department, Scott has moved into the position of lab and stores supervisor. Scott credits the great people in the department as a major part of the reason he accepted his new position, and he looks forward to giving as much back to the department as it has given to him.

Faculty and Staff Accomplishments

Dr. Fei Wang was awarded tenure and promoted to Associate Professor.

Dr. Keiichi Yoshimatsu was awarded tenure and promoted to Associate Professor.

Dr. Nikolay Gerasimchuk was promoted to Distinguished Professor.

Dr. Rich Biagioni was awarded the PSIP award.

Dr. Natasha DeVore was awarded the CNAS Faculty Excellence in Teaching Award 2021.

Helena Metzker was awarded the CNAS Diversity Award, a new award in 2021.

Brian High was awarded the CNAS Faculty Excellence in Service Award 2021.

Dr. Gary Meints was given 2021-2022 Board of Governors' Faculty Excellence in Public Affairs Award.

Dr. Wang, Dr. DeVore and Dr. Gerasimchuk from the Chemistry Dept., Dr. Besara from the PAMS Dept., and Dr. Michelfelder from the GGP Dept., have been awarded an MRI grant for the acquisition of a Single Crystal X-ray Diffractometer, by the National Science Foundation Division of Chemistry. An X-ray diffractometer allows accurate and precise measurements of the full three-dimensional structure of a molecule. This instrument will be an integral part of teaching as well as research and research training within the College of Natural and Applied Science at Missouri State University.
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2117129&HistoricalAwards=false



Science can cross many barriers, including those of international borders.

Dr. Nikolay Gerasimchuk, Distinguished Professor of Chemistry at Missouri State University, recently participated in two international meetings. Participating at this level gains greater exposure to the incredible work being done at Missouri State.



Chemist Dr. Gary Meints discusses his grant and the guest lecture it will support.

What do the origins of cancer, the aging process and immunity all have in common? DNA damage and the need for its repair. Dr. Gary Meints, Associate Professor of Chemistry, explores DNA repair in his research lab at Missouri State University. He also brought a world-renowned expert on the subject, Dr. James Stivers, to Springfield for a technical

lecture at Missouri State and general talk at the Discovery Center of Springfield. Stivers serves as a professor of pharmacology and molecular sciences at Johns Hopkins University School of Medicine. The intention of Dr. Stivers' talk and associated activities in partnership with the Discovery Center were to spur local interest in science, and promote better understanding of the scientific method and encourage people to consider careers in science. Meints recently received the Jean Dreyfus Lectureship for Undergraduate Institutions grant from the Camille and Henry Dreyfus Foundation. The \$18,500 award made the guest lecture, among other research opportunities, possible.

DNA stretches throughout the body in strands. Damage to these strands' chemical structure can be far-reaching, leaving harm throughout the body at all levels of cells they touch. This makes understanding DNA's repair process key to supporting human health. Why do scientists want to unveil this process? Basic research into fundamental processes can be foundational to future technological advancements. An example of such a connection between basic research and technological advancement includes magnetic resonance imaging (MRI) technology. Dr. Stivers' work, drawing from basic DNA research has the potential to reach key discoveries, working toward

In addition to Stivers' lectures, the grant will fund the work of two of Meints' undergraduate students. These students will get the opportunity to work in Stivers' lab during the summer semester.

"Johns Hopkins School of Medicine is a top-tier institution in biomedical research," Meints said. "The opportunities to connect with the university and bring Dr. Stivers as a world-renowned expert in DNA repair to our community are only possible by the significant generosity of the Dreyfus Foundation."

About the Camille and Henry Dreyfus Foundation

The Camille and Henry Dreyfus Foundation serves to advance the sciences – including chemistry, chemical engineering, and related fields – to improve relationships and conditions among individuals throughout the world. By providing programs and awards, it strives to address needs and opportunities in the sciences. The foundation's title honors Camille Dreyfus, a chemist, inventor and businessperson, and his brother, Henry Dreyfus.



Congratulations to Nikolay Gerasimchuk

Nikolay Gerasimchuk of the chemistry department received the **Matthew and Patricia Harthcock College of Natural & Applied Sciences Faculty Fellowship Award**.

The College of Natural and Applied Sciences (CNAS) is excited to announce that Dr. Nikolay Gerasimchuk, professor of chemistry, is the first recipient of the Matthew and Patricia Harthcock College of Natural and Applied Sciences Faculty Fellowship Award.

Harthcock College of Natural and Applied Sciences Faculty Fellowship Award.

Dr. Gerasimchuk began teaching at Missouri State University in August 2001. He earned tenure and promotion to associate professor in 2006. Then, he received a promotion to professor in 2012. Gerasimchuk has filed three patents at Missouri State and nine in total throughout his career. Since his last promotion, he has published over 40 peer-reviewed publications. Many of these publications included student co-authors.

He has also received significant funding from the National Institutes of Health (NIH).

“Dr. Gerasimchuk has shown impressive dedication to his research during his time at MSU,” Dr. Tamera Jahnke, dean of CNAS, said. “He never wavers in his performance or productivity.”

The newly endowed faculty fellowship award supplements faculty recipients’ supplies, salary, or student support to aid in their research efforts. It is the second funded faculty professorship/fellowship available to CNAS faculty. Funding for the award comes from the MSU Foundation.

Congratulations, Dr. Gerasimchuk!

Intellectual Contributions January 1, 2021 - December 31, 2021

Bhattacharyya, Gautam

Bhattacharyya, G. (2021). Mechanistic reasoning using the Electron-Pushing Formalism. In Georgios Tsaparlis (Ed.), *Problems and Problem Solving in Chemistry Education: Analysing Data, Looking for Patterns and Making Deductions* (pp. 127-144). Royal Society of Chemistry.

Biagioni, Richard N.

Thomas, A. L., Beyers, P., Kaps, M., Thomas, D. M., Westwood, M., Campos, G., Greenlief, C., Biagioni, R. N. *MWRM 2021 141 Soil nitrogen fertility influence on fruit characteristics of cultivated American elderberry*. American Chemical Society 2021 Midwest Regional Meeting

Bosch, Eric

Shapiro, N. M., Bosch, E., Unruh, D. K., Krueger, H. R. Jr., Groeneman, R. H. (2021). Iodoperchlorobenzene acts as a dual halogenbond donor to template a [2 + 2] cycloaddition reaction within an organic co-crystal. *CrystEngComm*, 23, 8265–8268.

Bosch, E., Bowling, N. P., Oburn, S. M. (2021). Conformational control through cooperative nonconventional C-H...N hydrogen bonds. *Acta Crystallographica Section C*, C77, 479-484.

Dunning, T. J., Unruh, D. K., Bosch, E., Groeneman, R. H. (2021). Controlling Topology within Halogen-Bonded Networks by Varying the Regiochemistry of the Cyclobutane-based Nodes. *Molecules*, 26, 3152.

Bowling, N. P., Speetzen, E. D., Bosch, E. (2021). Arylethynyl Helices Supported by π -Stacking and Halogen Bonding. *ChemPlusChem*, 86, 745-749.

DeVore, Natasha

Velappan, N., Close, D., Hung, L.-W., Naranjo, L., Hemez, C., DeVore, N., McCullough, D., Lillo, A., Waldo, G., Bradbury, A. (2021). Construction, Characterization, and Crystal Structure of Single Chain Thermal Green Fluorescent Protein Chimera.. *Protein Engineering, Design, and Selection*, 34, 1-11.

Gerasimchuk, Nikolay N.

Adu, S. A., Hietsoi, O., Tyukhtenko, S. I., Gerasimchuk, N. N., Charlier, H. (2021). Preparation, Properties and Crystal Structure of syn-isomer of 2,6-dichlorophenylcyanoxime, H(2,6-diCl-PhCO) – Potent Carbonyl Reductase Inhibitor. *Journal of Chemical Crystallography*.

Balijapelly, S., Sandineni, P., Adhikary, A., Gerasimchuk, N. N., Chernatynskiy, A. V., Choudhury, A. (2021). Ternary Alkali ion Thiogallates, A5GaS4 (A = Li and Na) with Isolated Tetrahedral Building Units and Their Ionic Conductivity.

Gerasimchuk, N. N., Kivijarvi, L., M. P. (2021). New Solids In As-O-Mo, As(P)-O-Mo(W) and As(P)-O-Nb(W) Systems That Exhibit Nonlinear Optical Properties.. *Molecules*, 26(1494), 1-31.

Gerasimchuk, N. N. (2021). Tuning π -Acceptor/ σ -Donor Ratio of the 2-Isocyanoazulene Ligand: Non-Fluorinated Rival of Pentafluorophenyl Isocyanide and Trifluorovinyl Isocyanide Discovered. *Molecules*, 26(981), 1-18.

Meints, Gary A. J.

Westwood, M. N., Ljunggren, K. D., Boyd, B., Becker, J., Dwyer, T. J., Meints, G. A. (2021). Single Base Lesions and Mismatches Alter the Backbone Conformational Dynamics in DNA. *Biochemistry*, 60(11), 873-885.

Rico, Cyren

Ying, S., Guan, Z., Ofoegbu, P., Clubb, P., Rico, C., He, F., Hong, J. (2022). Green synthesis of nanoparticles: Current developments and limitations. *Environmental Technology & Innovation*, 26, 102336.

Hong, J., Wang, C., Wagner, D. C., Gardea-Torresday, J., He, F., Rico, C. (2021). Foliar application of nanoparticles: Mechanism of absorption, transfer, and multiple impacts. *Environmental Science: Nano*(5), 1196-1210.

Sedaghat-Herati, Reza

McMullen, A., Ehie, D., Wyatt, Q., Kim, K., Sedaghat-Herati, R. (2021). Exploring Phosphonium and ammonium Chitosan Polymers and their PEGylated analogs for high performance Gene Delivery. *European Polymer Journal*, 159(5).

Wang, Fei

Nabi, M. R. U., Wegner, A., Wang, F., Zhu, Y., Guan, Y., Fereidouni, A., Pandey, K., Basnet, R., Acharya, G., Churchill, H., Mao, Z., Hu, J. (2021). Giant topological Hall effect in centrosymmetric tetragonal $Mn_{2-x}Zn_x$ Sb. *Physical Review B*, 104, 174419.

Ye, Z., Peng, W., Wang, F., Balodhi, A., Basnet, R., Hu, J., Zevalkink, A., Wang, J. (2021). Quasi-layered Crystal Structure Coupled with Point Defects Leading to Ultralow Lattice Thermal Conductivity in n-Type $Cu_{2.83}Bi_{10}Se_{16}$. *ACS Applied Energy Materials*, 11325-11335.

Misra, S., Pahari, D., Giri, S., Wang, F., Puravankara, S., Jana, P. P. (2021). The γ -brass type Cu-rich complex intermetallic phase $Cu_{41}Sn_{11}$: Structure and electrochemical study. *Solid State Sciences*, 119, 106682.

Ji, B., Pandey, K., Harmer, C. P., Wang, F., Hu, J., Wang, J. (2021). Centrosymmetric or Noncentrosymmetric? Transition Metals Talking in $K_2TGe_3S_8$ (T = Co, Fe). *Inorganic Chemistry*, 60(14), 10603-10613.

Yoshimatsu, Keiichi

Ellis, J. D., Iqbal, R., Yoshimatsu, K. (2021). Verification of the neural network training process for spectrum-based chemical substructure prediction using metamorphic testing. *Elsevier Journal of Computational Science*, 55, 101456.

Koide, H., Okishima, A., Hoshino, Y., Kamon, Y., Yoshimatsu, K., Saito, K., Yamauchi, I., Ariizumi, S., Zhou, Y., Xiao, T.-H., Goda, K., Oku, N., Asai, T., Shea, K. J. (2021). Synthetic hydrogel nanoparticles for sepsis therapy. *Nature communications*, 12, 5552.

Yoshimatsu, K., Fruehauf, K. R., Zhu, Q., Weisman, A., Fan, J., Xue, M., Beierle, J. M., Rose, P. E., Aral, J., Epstein, L. F., Tagari, P., Miranda, L. P., Shea, K. J. (2021). Metal-Free Polymer-Based Affinity Medium for Selective Purification of His6-Tagged Proteins. *Biomacromolecules*, 22(4), 1695-1705.

STUDENT ACCOMPLISHMENTS

Congratulations to the 2021 CNAS Research Symposium Winners

1st Place: Autumn Pilarski

Pilarski presented “¹H Solution NMR Analysis of an 8MER Non-Palindromic DNA Sequence Containing a U: G Mismatch.”

Her faculty advisor is Dr. Gary Meints, associate professor of chemistry.

2nd Place: Giselle Campos

Campos presented “Computational Study on Structure of IR Spectral Library Using Cluster Analysis.”

Campos’ advisor is Dr. Keiichi Yoshimatsu, associate professor of chemistry.

2021 3 Minute Thesis Winners

Spring 2021

Mehwish Khokhar

Khokhar presented “Synthesizing chalcone compounds to develop an inhibitor for Cytochrome P450 4X1 enzyme.”

Her advisor is Dr. Natasha DeVore, assistant professor of chemistry.

Tyler Odom

Odom presented “Shear Force Responsive Nanoparticles.”

His advisor is Dr. Keiichi Yoshimatsu, associate professor of chemistry.

MSU 2021 ACS Officers

President - Darren Kirsch

Treasurer - Marck Dragoi

Historian - Sarah McKenzie

Vice President - Samia Tahsin

Secretary/Recruitment- Trieu Nguyen

Graduate Chair - Megan Prado

Fall 2021

Megan Prado – 2nd Place

Megan presented “Towards a Nonenzymatic Inkjet-Printed “Biosensor” Platform.”

Her advisor is Dr. Adam Wanekaya, Department of Chemistry.

28th Annual Graduate Einhellig Interdisciplinary Forum Winners

Megan Westwood - Outstanding Teaching Assistant Award.

Megan Westwood and Dane Wagner - Outstanding Poster Awards.

Cammi Dargatz - Honorable Mention.

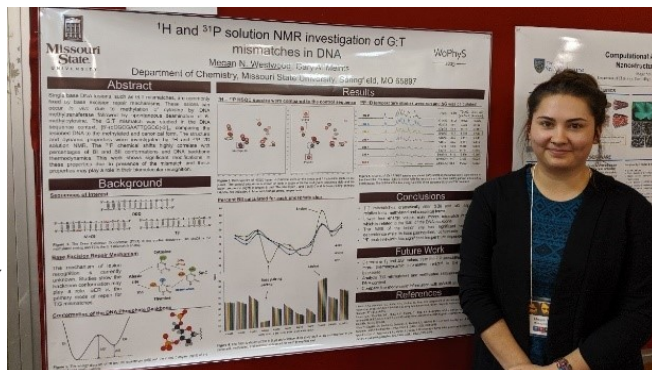
2021 Graduate Student Award in Environmental Chemistry

Dane Wagner - on behalf of the Division of Environmental Chemistry of the American Chemical Society.

Fostering research and representation in STEM

When you're copying a sequence of numbers, it's easy to get a couple mixed up. The body can do this, too – but with greater consequences.

“Before the body can fix problems, it must know how to recognize them,” said Megan Westwood, Missouri State University chemistry graduate student. Westwood studies how the body recognizes its mistakes. “Errors that don't get caught by the body can end up causing mutations and cancers.”



“If we can figure out how recognition occurs within the cell,” she said, “we can learn how the body initiates the repair process.”

Westwood was recently named one of Compound Chemistry's list of 100 notable women in chemistry. She and other researchers from the MSU chemistry department recently published a collaborative paper on their research findings. The research could provide insight needed to prevent and treat diseases.

“Understanding the mechanism at play in the body is key to shaping proper medical interventions in the biophysical and biochemistry fields,” she said. “There's power in knowing every detail of DNA.”

Through the NSF ADVANCE catalyst project MSU is making strides in increasing representation in STEM. Westwood hopes she and other female students in the chemistry department can make a difference in women's representation as future leaders in the field.

“Having few contributors of women's perspective in the sciences leads those few to become the voice of entire communities of women. Such a limited presence can't adequately represent women as a whole,” Westwood said.

“The many women at the undergraduate and graduate level in our program can improve the experience for generations of female scientists.”

Westwood has learned that such support in the chemistry department extends to recognizing the varying statuses of women's identities. This includes many as members of the LGBTQ community. Westwood is a member of the community herself.

“There's growing diversity in the chemistry department at MSU,” Westwood said, “and the department's community has been such a strong ally of women and LGBTQ in STEM.”

Megan was recognized by the website, Compound Chemistry.

For more information, the following URLs are to the main article and to Megan's profile.

<https://www.compoundchem.com/category/women-in-chemistry/>

<https://i1.wp.com/www.compoundchem.com/wp-content/uploads/2021/03/060-Megan-Westwood.png?fit=750%2C1050&ssl=1>

Dane Wagner Earns 2021 Graduate Student Award in Environmental Chemistry



The recognition of excellence comes from the American Chemistry Society. Dane Wagner, a graduate student in the chemistry and biochemistry department at Missouri State University, received the American Chemical Society (ACS) Division of Environmental Chemistry's 2021 Graduate Student Award in Environmental Chemistry. The award recognizes his scientific success in academics and collaborative research. Dr. Cyren Rico, assistant professor of chemistry, serves as Wagner's research advisor, and nominated him for the award.

The research that Wagner has been working on in Rico's lab, involves looking at any changes in velvetleaf and soybean exposed to perfluorooctane sulfonic acid (PFOS). He specifically looks at any changes in the plant's metabolite profile, elemental content, height, biomass, and chlorophyll content.

Wagner has also worked on many other projects in Dr. Rico's lab.

"When I first started, I worked on processing the metabolomics data for the cerium oxide nanoparticles (CeO₂ NP)," Wagner said. "This led me down the path to my current project, that is ultimately my thesis. My work in the lab has resulted in me being a co-author in 3 publications."

Wagner has also given several oral/poster presentations in national/local conferences and plans to pursue doctoral studies in environmental chemistry. Dr. Rico is confident that Dane will be successful in his PhD program and beyond that he will be an invaluable member to the scientific community in the future.

"My biggest focus in my research is the work I do with the ICP-MS determining elemental content in our plant samples," Wagner explained. "I am always looking for changes in elemental levels in our plant samples across our different PFOS treatments."

Wagner credits the research he has been able to perform in the chemistry and biochemistry department at Missouri State. "The opportunity to work so closely with the ICP-MS has been invaluable and was a key component in me receiving this award."

Wagner will receive a monetary reward and a one-year annual membership in the Environmental Division of the American Chemical Society. He will also have publicized recognition as an awardee on the division's website.

Congratulations to the 2021 Chemistry and Biochemistry Department Scholarship and Award Winners

Chemistry Dept. Scholarship Fund	Mikala Meadows
Harriett H. Ford Memorial Scholarship	Cole Jensen
Louise & Roland Harthcock Scholarship	Nicole Walker
Harthcock Chemistry Research Fellowship	Dane Wagner
Wyman & Sue Grindstaff Chemical Education Scholarship	Trinity Takahashi
Chemistry Board of Advisors Summer Research Fellowship	Brenda Wakesa, Seth Adu Amankrah
Doris C. Lorz Scholarship	Jane Jackovich
Emil Lorz Memorial Scholarship	Trinity Takahashi, Krusha Bhakta, Katie Baird
Foundation for Immunotoxicology Award	Mackenzie Keller
Dr. Robert W. Martin Research Fellowship	Camron Satterfield, Maximo Reyes, Emma Fonke, Haylee Grannemann
Eugene T. Scafe Memorial Scholarship	Renewing: Alex Babel New: Andrew Stoll, Nicole Walker Acacia Jurkowski, Sarah Longworth
Robert Lloyd Ernst Summer Graduate Assistantship	Polycarp Ofoegbu
Robert S. Christie Memorial Scholarship	Fantasia Critchfield, Clarissa Krimmel, Megan Prado
WEB & AOB Scholarship	Megan Prado
William J. Husa Chemistry Scholarship	Jane Jackovich
POLYED Undergraduate Organic Chemistry Award	Acacia Jurkowski
ACS Undergraduate Award in Analytical Chemistry	Krusha Bhakta
Outstanding Environmental Chemistry Student	Ian Sayers
General Chemistry Achievement Award	Victoria Ogbeifun
Outstanding Physical Chemistry Student Award	Autumn Pilarski
Outstanding Biochemistry Student Award	Nicole Walker
ACS Undergraduate Award in Inorganic Chemistry	Nicole Walker
Outstanding Inorganic Chemistry Student Award	Sarah Longworth
Outstanding Senior 2021	Giselle Campos

*We thank all the donors for their generosity.

Congratulations to our 2021 graduates.

We are proud of your accomplishments!

Spring 2021

Bachelors Degree

Anderson, Matthew (DeVore)
Campos, Giselle (Yoshimatsu)
Dumstorff, Carson (Richter)
Glover, Jackson (Rico)
Harms, Avery (Rico)
Jenkins, Danna (Siebert)
Kohn, Eden (Rico)
Lain, Brandon (Wang)
Lakin, Chad (Yoshimatsu)
Love, Travis (Rico)
Monash, John (Siebert)
Nagle, Rebekah (Schick)
Parker, Hannah (Rico)
Pilarski, Autumn (Meints)
Poole, Tara (Siebert)
Rydland, Mara (Bhattacharyya)
Sayers, Ian (Rico)
Schlottman, Matthew BSED
Shadowens, Claire (Bhattacharyya)
Simon, Timothy BSED
Smith, Catherine (Bhattachryya)
Studdard, Zachary BSED
Ukena, Jeremiah (Siebert)
White, Kensen

Undergraduate Certificate

Amuedo, Daniel
Cox, Jordan
Johnson, Keri
Khan, Maira
Meizler, Lauren
Roberts, Samantha
Sappington, Gabriela
Smith, Alaina
Stock, Carolyn
Valenzuela, Baylee
Weatherford, Courtney

Wilson, Regan

Summer 2021

Masters Degree

Idowu, Segun (DeVore)
Khokhar, Mehwish (DeVore)
Miller, Alexis (Steinle)
Odom, Tyler (Yoshimatsu)
Ofoegbu, Polycarp (Rico)
Sample, Stephen (Rico)
Sutton, Melinda (Schick)

Undergraduate Certificate

Turner, Chelsea
Young, Darby

Fall 2021

Masters Degree

Adu Amankrah, Seth (Gerasimchuk)
Mohammed, Abdul (Steinle)

Bachelors Degree

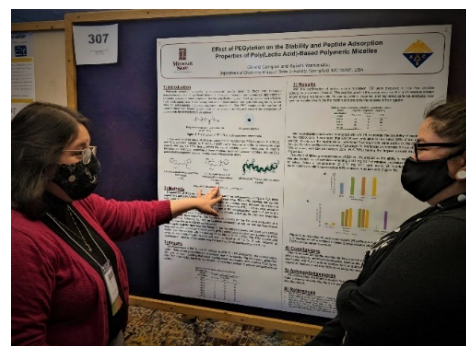
Babel, Alex (Yoshimatsu)
Dang, Katy (Herati)
Doebler, Cassy (Schick)
Flint, Zachary (Banerjee)
Fonke, Emma (Gerasimchuk)
Gutierrez, Luke (Yoshimatsu)
Johnson, Collin (Meints)
McKenzie, Sarah (DeVore)
Meadows, Mikala (Gerasimchuk)
Satterfield, Camron

Undergraduate Certificate

Dang, Katy (Herati)
Doebler, Cassy (Schick)
Dolan, Lucas
Quarti, James

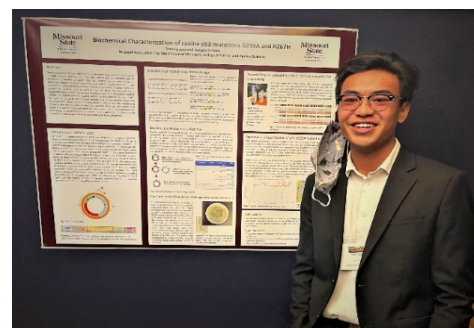
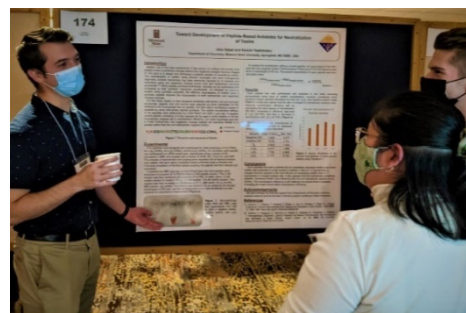
American Chemical Society

We had a great showing of presenters from our own department, including Giselle Campos, Naseem Saquer, Alex Babel, and Trieu Nguyen. Well done everyone!



American Chemical Society Midwest Regional Meeting

The 55th Midwest Regional Meeting of the American Chemical Society was held, one year deferred due to COVID, in Springfield, Missouri October 20 – 22, 2021. The meeting was organized by many faculty members within the Missouri State University Department of Chemistry, including Dr. Eric Bosch (co-general chair), Dr. Matthew R. Siebert (co-program chair), Dr. Gary Meints (Treasurer), Dr. Richard Biagioni (Exhibits Chair), and Dr. Fei Wang (Printing & Publicity Chair). This meeting, co-organized with the MoKanOk section, drew over 600 chemists from around the region to attend an exclusively in-person meeting. Over 400 presentations were delivered over the three-day meeting, many of which represented the first in-person presentation for many students (and some faculty), which represents a tremendous service to the chemistry community. In an emotional delivery at the meeting, John Adams, of ACS governance, proclaimed his overwhelming pride that his region had been the first to bring back the in-person modality in a safe and responsible manner.



Undergraduate Ian Sayers Earns Environmental Chemistry Award

The recognition of excellence comes from the American Chemistry Society. Ian Sayers, an undergraduate in the chemistry department at Missouri State University, received the American Chemical Society (ACS) Division of Environmental Chemistry's 2021 Undergraduate Student Award in Environmental Chemistry. The award recognizes his scientific success in academics and collaborative research. Dr. Cyren Rico, assistant professor of chemistry, serves as Sayers' research advisor, and nominated Sayers for the award. In Rico's lab, Sayers works with fellow students to investigate the effects of widespread soil contaminants on plants. This includes those that harm agricultural crops like wheat and soybeans and consequently the people who eat them.



"When people consume contaminated crops, they can ingest pollutants through the plants," Rico said. "They can also get less nutritional value from food crops following contamination."

Sayers focuses on one specific plant pollutant: a chemical known as PFOS. Researchers deem the contaminant a 'forever chemical' as it does not degrade. This means it can stay in the environment for an extensive period.

"There are no regulations yet on these pollutants," Rico said, "so any information on how they affect food crops and the people who consume them can serve as key contributions to science and humanity."

Sayers' contributions to the research community involves a method he developed for testing how different treatments for PFOS affect plant health.

"The method provides a visually meaningful representation of the data, rather than just numbers in a spreadsheet," Sayers said. "This makes the work of determining the pollutant's impact that much easier and provides clearer evidence of the effects to the general public."

Quality work often begins with a good work ethic. Sayers' excellent work ethic has led him to several achievements during his student career. This includes preparing protocol for Rico's lab, presenting at the CNAS Undergraduate Research Symposium and receiving the department's Outstanding Environmental Chemistry Student Award. His research contributions will also fuel material for presentations and two manuscripts for journal publications that he will co-author. Dr. Rico is proud of Sayers for earning the ACS award as further recognition of his outstanding work.

"Ian is always ready for any project and works well with other students, which makes his contributions to lab studies so valuable," Rico said.

Sayers considers the ACS award encouragement to keep moving forward.

"I'm grateful for ACS' recognition of my contributions to Dr. Rico's lab and the research community," Sayers said. "It means a lot to know I can make a lasting impact on the work of our environmental chemistry group."

Sayers will receive a one-year membership in the ACS Division of Environmental Chemistry as the award recipient. He will also have publicized recognition as an awardee on the division's website.

ALUMNI UPDATES 2021

Anderson, Matt (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Babel, Alex (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Baker, Lane (BS 1996) Professor, Texas A&M University, College Station TX

Bakker, Michael (MS 2020) Pursuing Ph. D. at Charles University, Prague

Campos, Giselle (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Curtis, Scott (MS 2013) Laboratory and Stores Supervisor, Missouri State University, Springfield MO

Dang, Katy (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Davidson, Aaron (BS 2020) BASF, St. Louis, MO

Dobbs, Zachary (BS 2020) Environmental Specialist, MO Dept. of Natural Resources

Frank, Kathryn (BS 2012) Advance Analytical Chemist, 3M Columbia MO

Hayes, Lauren (MS 2012) Regulatory Quality System and Archives Lead, Bayer St Louis MO

Idowu, Oluwasegun (MS 2021) Pursuing MBA at the University of Arkansas

Jones, Cody (BS 2020) Bayete Group Technical, Salt Lake City, UT

Khokhar, Mehwish (MS 2021) Pursuing MBA at the University of Arkansas

Lakin, Chad (BS 2021) Brewer Science, Springfield, MO

Miller, Alexis (MS 2021) Pursuing Ph. D. at the University of Illinois, Urbana Champaign, IL

Nagle, Rebekah (BS 2021) Research Technician, Stowers Inst. for Medical Research, Kansas City, MO

Odom, Tyler (MS 2021) Pursuing Ph. D. at the University of Texas at Austin

Ofoegbu, Polycarp (MS 2021), Indiana University, Bloomington IN

Pilarski, Autumn (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Smith, Catherine (BS 2021) Graduate student at MSU Department of Chemistry and Biochemistry

Sutton, Melinda (MS 2021) Research and Development Chemist at Gem Gravure CO, Springfield-Branson MO-area

Tague, Eric (MS 2013) Software Product Manager at Thermo Fisher Scientific, Bartlett IL

Wekesa, Brenda (MS 2021) Pursuing Ph. D. at the University of Missouri, Columbia, MO



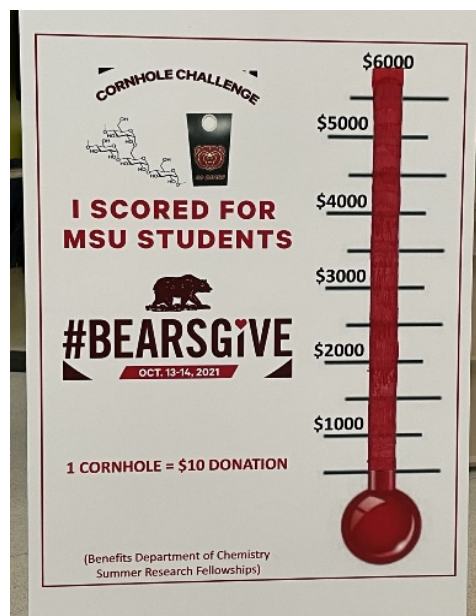
Giving Day

Dr. Matthew Harthcock and Patricia Harthcock hosted the **Chemistry Cornhole Challenge** at this year's MSU **John Goodman Giving Day**.

Their goal was met and exceeded!

Many thanks to the Harthcock's for supporting the summer research students in the **Missouri State Chemistry and Biochemistry Department**.

At Missouri State University Department of Chemistry and Biochemistry,



**GIVING
IS
FUN!**



Dr. Matthew Harthcock

Matt Harthcock graduated from Missouri State with a bachelor's degree in chemistry in 1977 and went on to receive his PhD in chemistry from Texas A&M University.

Since then, he has made significant contributions to product development and innovation in the plastics, automotive and aviation industries.

His past employers include The Dow Chemical Company and GE Plastics, now a part of Sabic.

He retired in late 2019 from Schneller (a TransDigm company), an aviation and aerospace materials company in Ohio. He now resides in Ohio and Florida, and is CEO of his own company, Solutions by Harthcock Associates.

He has served MSU on the chemistry department's advisory board and the Foundation Board of Trustees.

Now, he's also a member of the Onward, Upward campaign cabinet.

He and his wife Patricia — who also attended MSU — have established gifts to help the next generation of chemists and faculty. They established an endowed student scholarship in honor of his parents, and an endowed graduate student fellowship. They also wanted to do something more.

One of the areas of focus for the Onward, Upward Campaign is faculty. Faculty have a significant impact on students, and Mr. Harthcock is grateful that he had several excellent professors while attending MSU. By creating an endowed faculty fellowship, Mr. And Mrs. Harthcock hope to help recognize excellence in faculty. At the same time, students benefit from faculty who have the skills and accomplishments to receive such a fellowship.

The Harthcock's gift is only the second faculty endowment for CNAS. They have largely focused their giving on the chemistry department and CNAS, targeting the areas that they feel have benefited them most in their lives, now choosing to give back and support the sciences.



GIVING

State universities could not operate without generous contributions from alumni and friends. Your support enables us to provide scholarships, teaching equipment, and more. We hope you will consider making a contribution; your gift is tax deductible. If you would like to contribute, please make checks payable to the MSU Foundation in support of Chemistry, and mail to: Temple Hall 423, 901 S. National Ave., Springfield, MO 65897. Or, you can donate online at:

<https://webapps.missouristate.edu/giving/pledgesearch.aspx?search=chemistry%20dept-general>

Thank you!

A special thanks to Ashley Lenahan, Marla Fritz, and Adam Wanekaya for their contributions to this issue of *Molecules and Moles*, the Chemistry Department Newsletter.

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