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Mole Street Journal, January 2020

University of Arkansas, Fayetteville. Dept. of Chemistry and Biochemistry

Excellence in the Central Science

The Mole Street Journal

Department of Chemistry and Biochemistry

The Mole Street Journal Volume 18, Issue 4 January 2020

Remembering Research Pioneer and University Emeritus Professor James Faulk Hinton

The department lost a longtime faculty member, research pioneer and friend. James Faulk "Jim" Hinton, Jr., University Professor Emeritus, passed away on July 20 in Fayetteville. The funeral service was held July 27.

He is survived by his wife, Barbara Elizabeth Hinton; three sons, James David Hinton, Robert Edward Hinton and Thomas Wade Hinton; and five grandchildren. Hinton was born on May 5, 1938, in Bessemer, Alabama, to James Faulk Sr. and Ouida Elva Hinton.

He received his B.S. degree in 1960 from the University of Alabama, and his M.S. in 1962 and doctorate in 1964 from the University of Georgia working with professor J.F. Johnson.

Hinton joined the Department of Chemistry and Biochemistry at the University of Arkansas as a postdoctoral student working with professor Ed Amis in 1965. He was appointed assistant professor in 1967, was promoted to associate professor in 1971, professor in 1975, University Professor in 1989, and University Professor Emeritus in 2016.

Hinton was a pioneer in the development of Nuclear Magnetic Resonance (NMR) techniques to study important chemical and biological systems. He established the NMR Core Facility at the University of Arkansas in 1971 with an NSF grant to purchase the first major NMR spectrometer at the U of A, a Bruker HFX-90. He went on to receive additional grants to fund state-of-the-art NMR spectrometers, including a Department of Education grant to purchase the first high field superconducting NMR at the U of A, a Bruker 500 MHz NMR. He then wrote the section of the NIH COBRE grant in 2000 to fund and set up 500 and 700 MHz spectrometers with high-sensitivity cyroprobes. neuromuscular diseases.

He was the director of the NIH NMR Core facility until his retirement to University Professor Emeritus in 2016.

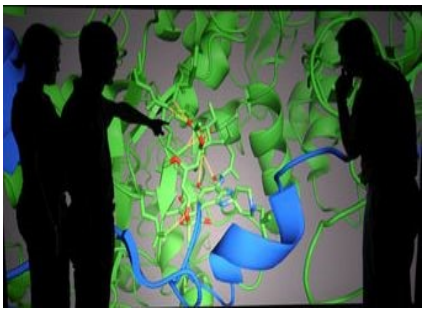
As director of the NIH NMR Core Facility, Hinton worked closely with faculty and students to develop new NMR techniques to address the goals of their projects. He developed new NMR pulse sequences to examine both the structure and dynamics of proteins. These NMR techniques are being used to determine the structure and function of proteins that have important roles in human health, including heart disease, brain function, wound healing and cancer. As University Professor Emeritus, Hinton continued to work closely with students and colleagues to use NMR to address important biomedical problems.

Hinton also developed an Immersive 3D Virtual Reality system that allows immersion of an observer into a protein, in order to be able to "walk around" inside a protein to understand how it functions. U of A students and faculty use this system to view the

Inside this issue:

protein structures they have determined by NMR and X-ray crystallography, and to design new experiments to understand the function of the protein. Many students and visitors have experienced this virtual reality system and have been fascinated by its potential use in many biomedical fields, including drug design.

Hinton was a pioneer in the study of the role of monovalent cations such as Na+ and K+ in biological systems. He developed the Thallium 205 (Tl205) NMR method to study the binding and transport of monovalent cations across biological membranes by ionophore antibiotics such as valinomycin, monensin, nigericin, nonactin and dinactin. His studies on the thermodynamics and kinetics of monovalent cation binding to these antibiotics provided greater insight into their mechanism of action, which



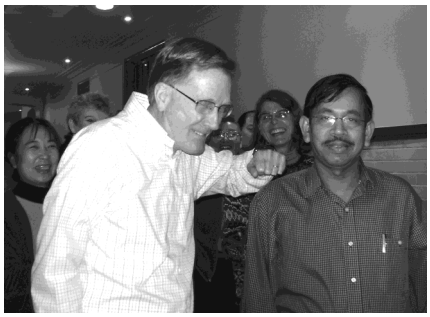
Denise Greathouse
Researchers at the University of Arkansas can study proteins up close and personal using a virtual reality program.

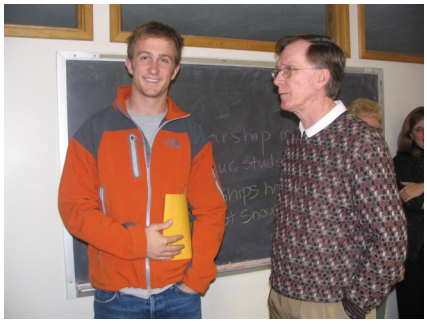
could lead to the development of improved antibiotics.

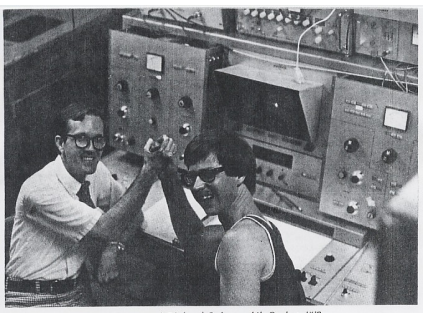
Hinton and his students and colleagues then focused their research on how monovalent cations are transported across biological membranes by the channel-forming ionophore gramicidin A. Using Tl-205 NMR, they determined the thermodynamics and kinetics of cation binding to gramicidin. Hinton developed 2D NMR techniques to determine the complete three -dimensional structure of gramicidin in biological membranes, as well as the backbone and side-chain dynamics. Cation transport is critically important to the transmission of nerve impulses from one brain cell to another, and down the nerve cell axon to stimulate the muscle. Their research provided insight into many neurological and neuromuscular diseases.

Hinton also worked with colleagues to develop improved theoretical methods to study biological systems. One of his papers with Peter Pulay is the most cited scientific article to come from the state of Arkansas. (K. Wolinski, J.F. Hinton and P. Pulay, "Efficient Implementation of the GIAO Method for NMR Chemical Shift Calculations," JACS, 112, 8251 (1990)).

Hinton published over 150 articles in peer-reviewed journals with his students and colleagues. He was also an outstanding teacher and mentor to undergraduate honors students and graduate students and directed the dissertations of 26 doctoral students. His graduate courses were popular and graduate students held him in high esteem. Hinton's students have done exceptionally well in their careers. Richard Briggs, one of Hinton's first doctoral students, took a postdoctoral position with professor George Radda at Oxford University where they developed the Magnetic Resonance Imaging (MRI) technique. Briggs went on to become a pioneer in the development of MRI, which is now one of the most powerful methods of medical diagnosis. Dikoma C. Shungu, who received his doctorate with Hinton in 1986, is now professor at Weill Cornell Medical College, and has developed advanced MRI techniques to study neurological and metabolic disorders.







From the Chair

~ Wesley Stites (past chair)

On August 31st I stepped down as the chair of the Department of Chemistry and Biochemistry, after almost exactly five years in that position. The next day, September 1st, I began working as Associate Vice Chancellor for Research and Innovation. I will remain on the faculty of the Department of Chemistry and Biochemistry, and many of my duties in my new position will impact the department, but my focus will be broader.

Matt McIntosh, who has served for the past 5 years as the vice chair, was appointed as interim chair. Matt was appointed chair of the department in November by Fulbright College Dean, Todd Shields.

I'm sure that the future holds many interesting and good things for the department, but please allow me here to briefly reflect on the past five years. The university and the department, of course, have changed over the past five years. We have welcomed many new faculty and students, but one of the more notable changes has been a large-scale turnover of our staff, after many years of stability.

The staff of the department is sometimes overlooked by both the faculty and the students, but as chair it was blindingly obvious to me that without the hard work of our staff both the faculty and students would be unable to do their work and studies. We have been blessed with many wonderful people in these critical positions over the course of my career here, but, as noted above, there had not been a great deal of change. Today, there is not a single person in the departmental administrative staff who is working in the same position that they occupied at the beginning of my time as chair. Indeed, there are only two people who were working in the department at the time I became chair. One of those individuals, Heather, has only recently returned to the department after spending time in the Department of Entomology and Plant Pathology.

Hiring and working with our new staff as they learn their jobs has been one of the greatest challenges and rewards of my time as chair. I view it as a near miracle that we were able to keep going with very few hiccups as this generational change of people took place. That is due to them and not me, but I'm very proud both of the former and current people in those positions and to have played a small part in that change.

The department also saw a large number of faculty positions turn over. Again, I am glad to have been given the opportunity to play a small part in this change and to welcome a wonderful group of new people into our faculty ranks. That excitement was bittersweet with the retirement of so many experienced and distinguished faculty.

Many wonderful undergraduate and graduate students have passed through the department and they seem to get better every year. I am pleased that my plan to offer all our large service courses every semester has been accomplished. This change was hard to pull off, but it has equalized our spring and fall teaching loads and contributed substantially to the gains in the University's four and six year graduation rates.

We aren't done with change in the department of course. Perhaps the biggest disappointment for me is that while the data clearly show that we are the second to last in funding of our teaching mission in the entire University, we have not been able to grow in numbers of faculty, staff, and teaching assistants to handle the increasing strain this is causing.

I am hopeful that message is getting through at last and that we will be properly funded and ready to grow to the next level under the next chair.

Thanks to all who have made the positive changes of the last five years possible,
Wesley Stites

ALUMNI SPOTLIGHT

GERARD (JERRY) VINTON SMITH Ph.D. 1959

Jerry is particularly proud of a book he published back in 1999, "Heterogeneous Catalysis in Organic Chemistry". He says, "Incredibly, people are still buying it." Originally Academic Press published it, but now Elsevier Inc. does. They send him royalties on March 30 of every year and the last one reported they had sold 728 hard copies. Most sold now are electronic copies, which appear not counted in the total, so Jerry guesses they'll never sell 1,000 hard copies, which I think is some sort of "success" marker for an academic book.

Jerry started the book when he was a Visiting Professor at Pohang University of Science and Technology in 1996 and lecturing to a class of chemical engineering graduate students. He soon saw that the students didn't know much about heterogeneous catalysis, so he wrote an introductory chapter for them. Jerry continued to work on it in 1997. Later, in 1998, when Jerry and his wife, Jolynn, spent most of the summer in Szeged, Hungary, he wrote much of the rest and was fortunate to recruit one of his Hungarian colleagues, Ferenz Notheisz, to write the last chapter on homogeneous catalysis, which was just becoming popular then.

Jerry writes that his wife and he are getting old and their kids wanted them to get out of their current house, which they'd lived in for 50 years. He writes that their kids worry about them going up and down the stairs, so he and Jolynn bought a one-story house about 1.3 miles away in the perimeter of an assisted living facility and are in the process of moving. It turns out that moving is daunting, especially after accumulating stuff for the 61 years they've been married. Jerry closes by saying as the Hungarians do, "Ilyen az elet" - such is life.

JEFF SCHWEHM Ph.D. 1998

It has been busy couple of years for alum Jeffrey Schwehm.

Jeff got married in June 2018 and right before that, he was awarded the Outstanding Faculty in Teaching and Leadership at Concordia University Ann Arbor in the Spring of 2018, where he had been for the past six years.

Then in the spring of 2019, he heard from an old friend back in Nebraska, the state where he had started his independent career at the (other) Concordia University.

His friend had just become Provost at Bryan College of Health Sciences in Lincoln, Nebraska and recruited Jeff to their faculty as chemistry professor. So he and his new wife moved back to Nebraska this past June.

Jeff says of Lincoln, "This is an interesting place. It is a non-residential college housed on a hospital campus. I teach in their Biomedical Sciences program."

RANDY F. ESPINAL Ph.D. 2018

Randy is back in his home country, the Dominican Republic, and is now a professor of chemistry in the Department of Exact and Natural Sciences of The School of Science and Engineering at the Pontificia Universidad Católica Madre y Maestra (PUCMM) located in Santo Domingo, Dominican Republic. He started this position back in April of this year.

Randy's research work is about the development of medical diagnostic tools based on paper-based microfluidics technologies. The idea is to develop easy-to-use medical diagnostic devices for the screening of tropical or mosquito-borne diseases like Dengue, Zika, Chikungunya, and so on. Mosquito-borne diseases impact the Dominican Republic greatly every year and their impact is going to exponentially increase due to climate change and expand to other areas of the world (https://www.nytimes.com/interactive/2019/06/10/climate/dengue-mosquito-spread-map.html).

Randy is establishing a Bioengineering Lab as well. He received some initial funds and support from the university to start his research project.

Also, he founded a biotech startup called Ventnostics, LLC (www.ventnostics.com) to develop and commercialize over-the-counter diagnostic tools for tropical or mosquito-borne diseases. This will be in collaboration with his university (the details about the collaboration are still in the works, since it is something totally new.)

Remembering esteemed chemist and alumna, Mary Lowe Good

https://www.arkansasbusiness.com/article/129067/mary-good-pioneering-arkansas-scientist-dies-at-88

Mary Lowe Good, a pioneering scientist, distinguished educator, successful researcher in private business and high-ranking government official who served as undersecretary for technology in the U.S. Department of Commerce under President Bill Clinton, died Wednesday morning at her home in Little Rock. She was 88.

Good, a native of Texas who moved to Arkansas as a child, won many awards during her career, including the National Science Foundation's highest honor, the Vannevar Bush Award.

The founding dean of the UA Donaghey College of Engineering & Information Technology at the University of Arkansas at Little Rock, Good was named to the inaugural class of Arkansas Women's Hall of Fame in 2015.

In an Arkansas Business profile of her on that occasion, she explained her motivation: "I've never been afraid to do new things. In fact, I like to do new things." "I don't mind jumping into something I know not very much about and I believe I'll be able to learn it," she said. "I think that's really a big piece of it."

Good's willingness to learn new things led to many firsts. She was the first woman elected to the board of the American Chemical Society and its first female president, in 1987.

Good was also the first woman to receive:

- The IRI Medal (1991) from the Industrial Research Institute for contributions to technological innovation.
- The Charles Lathrop Parsons Award for Public Service (1991) from the American Chemical Society.
- The Glenn T. Seaborg Medal (1996) from the University of California at Los Angeles for contributions to chemistry and biochemistry.
- The American Chemical Society's highest honor, the Priestley Medal (1997). (Among other winners of the Priestley Medal was Linus Pauling, winner of the Nobel Prize in Chemistry in 1954.)
- The AAAS Phillip Hauge Abelson Prize (1998) from the American Association for the Advancement of Science.

In 2004, Good received the Vannevar Bush Award, and in 2012 she was one of five inaugural honorees of the U.S. News STEM Leadership Hall of Fame.

Good, born in Grapevine, Texas, on June 20, 1931, moved to Arkansas with her parents, who were schoolteachers, to the town of Kirby (Pike County) and then to Willisville (Nevada County).

She went to Arkansas State Teachers College (now the University of Central Arkansas) to earn a home economics degree, but a freshman chemistry class altered that trajectory.

"I had a fabulous elderly man that taught freshman chemistry and I was intrigued by it," she said in a 2012 film by the Chemical Heritage Foundation. "I just thought it was the most interesting thing I'd ever had anything to do with. My time as a home ec major was one semester."

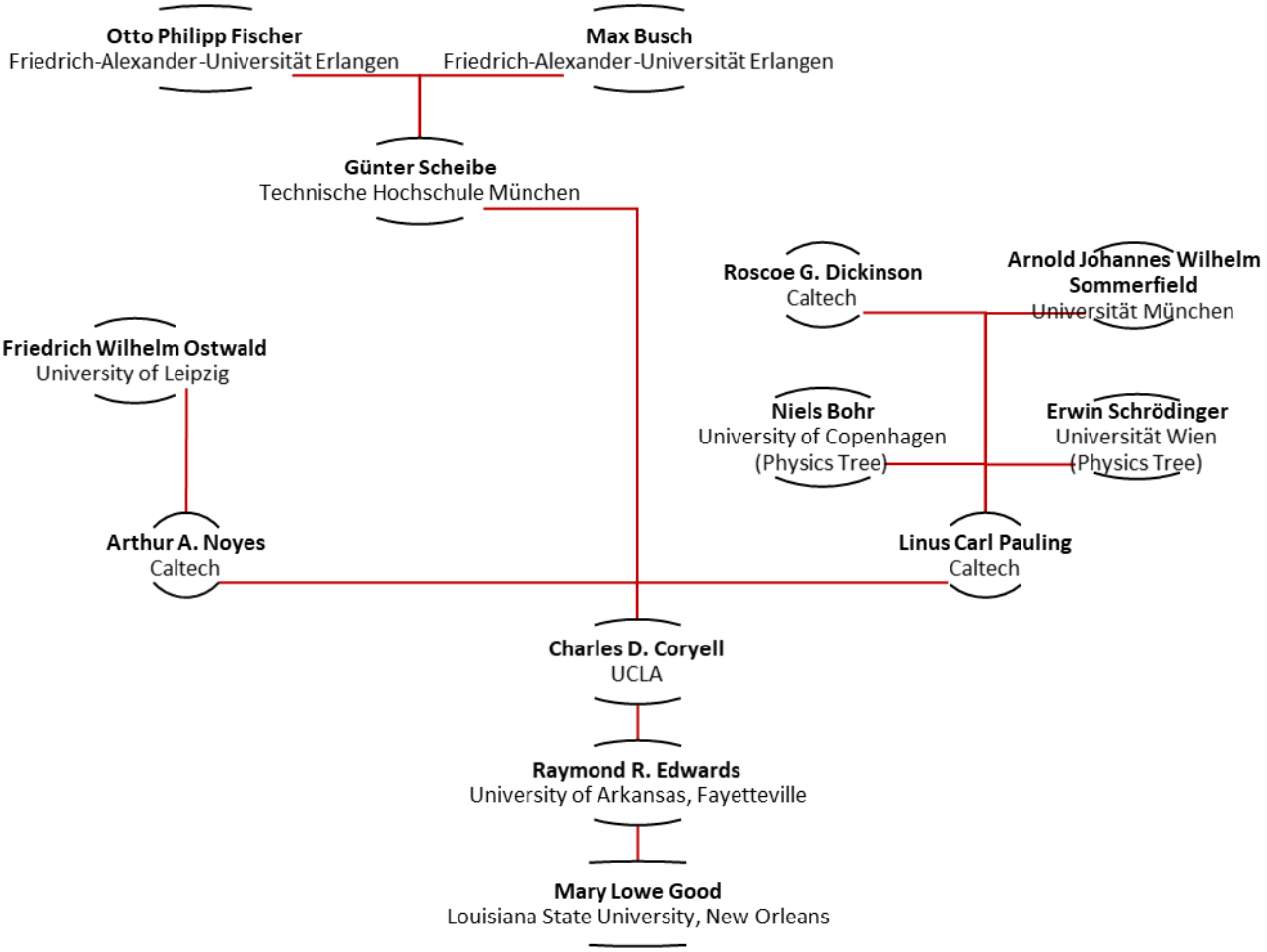
Good earned her bachelor of science in chemistry and physics in 1950, and went on to study **radiochemistry at the University of Arkansas at Fayetteville.** "One research breakthrough changed the field of medicine and remains a mainstay in treating thyroid disorders," the Arkansas Business profile noted. "People had been using iodine — radioactive iodine — to treat thyroid disorders, and it was the wrong chemistry for the thyroid to pick up," she told the CHF. "So all we had to do was add a little bit of iodide to it. That stabilized the radioactive isotope and it handled it very well."

By 1955, Good had earned her master's and her doctorate. She then began a 25-year teaching and research career in the Louisiana State University System, both at LSU in Baton Rouge and at the University of New Orleans. Good ultimately attained the office of Boyd Professor of Chemistry, the first woman to achieve the university's most distinguished rank. In 1978, she developed a new program as the Boyd Professor of Materials Science, Division of Engineering Research, at LSU.

Good entered the private sector in the 1980s, taking a job in 1981 at Universal Oil Products in Chicago, a company that evolved into AlliedSignal and then Honeywell. "UOP [made] a living by licensing technology. You have to have the best technology and you have to have it first," she told the CHF. "So that's kind of a fun and challenging thing to do and I enjoyed that very much." Good was appointed to the board of the National Science Foundation by President Jimmy Carter in 1980, becoming the first woman to chair the board, and was reappointed by

President Ronald Reagan. President George H.W. Bush named her to the President's Council of Advisors on Science & Technology in 1991. Good left AlliedSignal in 1993 to become undersecretary for technology in the U.S. Department of Commerce in the Clinton administration. Good became the Donaghey University Professor at UALR in 1997 and the founding dean of the EIT College. Good retired from the EIT College in 2011, going on to serve a variety of advisory roles in higher education, business and economic development.

Good met her husband, Bill Good, while both were graduate students in physics. They married in 1952. Bill Good predeceased her. Good's sister, Dr. Betty Lowe, was instrumental in the growth of Arkansas Children's Hospital in Little Rock, which she served as medical director. Betty Lowe died in 2013. Good is survived by two sons, Billy John Good of Little Rock and James Patrick Good of Madison, Wisconsin; their wives, Peggy Good and Laura Good; four grandchildren; and two great-grandchildren. A visitation with Good's family was held from 6 to 8 p.m. on Monday, Nov. 25, at Pinecrest Funeral Home, 7401 Hwy. 5 N. in Alexander. The funeral was held Nov. 26 at the same location at 2 p.m. Tuesday, Nov. 26. In lieu of flowers, the family has suggested donations to the Women's Foundation of Arkansas' Girls of Promise program, Arkansas Repertory Theatre or the Arkansas Symphony Orchestra.



Chemistry family tree for Mary Lowe Good, Ph. D., Inorganic Chemistry, University of Arkansas, 1955. Though the department has an outstanding pedigree, only a few former and current faculty of the department have well-populated trees; many faculty members and recent doctorates do not. For information on registering and updating your tree, contact mbparett@uark.edu. A departmental family tree poster is in the works; details in the next Mole. Reformatted data with permission of academictree.org.

George D. Blyholder Endowed Award in Physical Chemistry Gifts Provide Needed Support to Students

The department continues to receive donations from former Ph.D students of Dr. Blyholder. These donations along with a recent significant donation from Mrs. Betty Blyholder provide support to physical chemistry students. The department and the awarded students are grateful for this generous support that allows them to remain research active outside of the regular academic year. It has a substantial positive impact on students' careers here at the University of Arkansas and opens opportunities for them once they graduate and leave our campus for the wider world.

Graduate Students Receive Department Awards

Victoria Gilson Hunter and **Miguel Abrego Tello** both received the Wally Cordes Teaching Assistant Award for excellence in teaching undergraduate laboratories. **Anh Nguyen** received both the Wally Cordes Teaching Assistant Award and the George D. Blyholder Endowed Award in Physical Chemistry. The Blyholder will provide support to Nguyen in his final semester, spring 2020.

Anh Nguyen receiving the Blyholder Award in Physical Chemistry. He is accompanied by Physical Chemistry Professor, Seymour Wang.

Miguel Abrego Tello is surprised and happy to receive the Cordes Teaching Award. The award is presented to him by department chair, Matt McIntosh, and Chris Mazzanti.

Victoria Gilson Hunter is thrilled to receive the Cordes Teaching Assistant Award. She is accompanied by teaching lab director, Dr. Chris Mazzanti.

Anh Nguyen gives a thumbs up to receiving the Cordes Teaching Assistant Award from Chris Mazzanti.

Opportunities to Support Students

Why give?

Your gift allows us to provide more students with opportunities to learn and grow in working research labs.

Where to give

There are several funds to support specific areas of research or to recognize academic achievement.

Undergraduate

- Amis Chemistry Scholarship
- Arthur and Lois Fry Scholarship in Chemistry
- Barbara Wertheim Campbell Award
- Chemistry and Biochemistry Achievement Award
- Chemistry and Biochemistry Scholarship Fund
- Coulter W. Jones Award
- Frederick A. Kekule Award
- Jacob and Wilma Sacks Chemistry Fund
- Jacob Sacks Chemistry Award
- Kathy Noland Chemistry Award
- Octa N. High Chemistry and Biochemistry Scholarship
- Samuel and Betty Siegel Scholarship
- W. Ves Childs Science Education Scholarship
- William K. Noyce Scholarship

Graduate

- A.W. Cordes Chemistry Fund
- Anthony Ray Jude Memorial Award
- Collis Geren Award
- Virginia R. Hicks Endowed Scholarship
- Donald and Susan Bobbitt Award in Chemistry and Drama
- Dr. and Mrs. Roger B. Bost Endowed Award
- International Graduate Student Fellowship
- George D. Blyholder Endowed Award in Physical Chemistry
- Barrett S. and Peggy S. Duff Doctoral Fellowship in Chemistry

There also is a general fund that supports the department with its most immediate needs.

Ways to give

Give Online

https://onlinegiving.uark.edudesignation=J.+William+Fulbright+College+of+Arts+and+Sciences

In the Designation box select "Other department, program or fund" and in the Other department, program, or fund enter "Department of Chemistry and Biochemistry" (or the name of a specific fund in the department to which you want to donate).

Other ways to give

- Check or Electronic Bank Draft - **https://annualfund.uark.edu/make-a-gift/AnnualFundGiftForm.pdf**
- Payroll Deduction for U of A employees - **https://red-white-true.uark.edu/payroll-deduct/**
- Estate & Gift Planning - **http://plannedgiving.uark.edu/**
- Matching Gifts - **http://www.matchinggifts.com/uark**
- Stock or Wire Transfer - **Call Gift Services at (479) 575-7970**

To discuss a gift to Department of Chemistry and Biochemistry, please contact: The Office of Development & External Relations at 479-575-3712 or fubright@uark.edu.

Stay Connected

Email what you would like to share in the newsletter to **cheminfo@uark.edu.**

To become an alumni member, visit **arkansasalumni.org.**

In 2020, look for a new email newsletter format for the Mole produced by the department and distributed by the Arkansas Alumni Association.

Congratulations to alumna **Molly Steen** for being promoted to Deputy Chief Pharmacist at Quentin N. Burdick Memorial Health Care Facility.

Bundles of Joy

Matt Gerner, Instructor, and his wife, Rachel, welcomed a son named David Charles in to their family in August.

Will and **Christena Nash** (PhD 2014) welcomed in June a daughter, Abigail Julie, into their family.

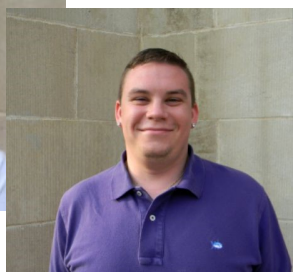
Abigail joins big brother, Ezekiel, and the rest of the Nash clan in their home in the Atlanta area.

Poster Competition Winners Announced

Congratulations to **Mahsa Lotfi-Marchoobeh** and **Colin O'Donnell** who won 1st and 2nd place, respectively, in the departmental 3-minute thesis competition.

Mahsa Lofti-Marchoobeh

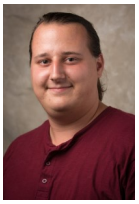
Colin O'Donnell



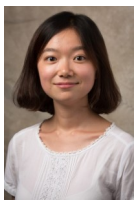
Students Pass CUMEs

The passing of cumulative exams earns students the status of Ph.D. candidate.

Miguel Abrego Tello
Chitre, Panama
BS University of Arkansas

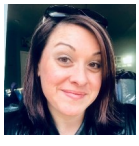


Andrew Hodge
Boonsboro, MD
BS Henderson State University



Jingnan Li
Henan, China
BS Beijing Institute of Technology

Peter Ponce
Clarksville, TN
BS Austin Peay State University



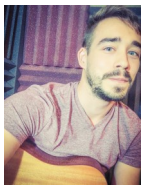
Amanda Raley
Nacogdoches, TX
BS Stephen F. Austin University

Students Successfully Defend Dissertations

The following students successfully defensed their dissertations and will graduate in the fall 2019 term.

Fahmida Afrose, CHEMPH
Influence of single and multiple histidine residues and their ionization properties on transmembrane helix dynamics, orientations and fraying.
Advisor: Roger Koeppe II

Mercede Furr, CEMBPH
Toward Understanding the Mechanism of Protein Targeting in the Chloroplast Signal Recognition Particle Pathway
Advisor: S. Thallapuranam



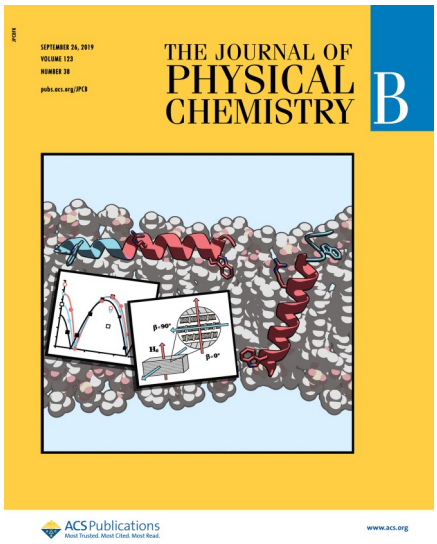
Matt McKay, CHEMPH
Rotational Tuning of Transmembrane Helix Properties Based on the Precise
Advisor: Roger Koeppe

Jessica Pickens, CHEMPH
Probing of carbohydrate-protein interactions using galactonoamidine inhibitors
Advisor: Susanne Striegler

Qile Wang, CHEMPH
Reactivity of Photogenerated Amine Radical Cations
Advisor: Nan Zheng

Dustin Baucom, CHEMPH
Single molecule fluorescence studies of protein structure and dynamics underlying the chloroplast signal recognition particle targeting pathway
Advisor: Colin Heyes

Musaab Habeeb Ali Al Ameer, CEMBPH
Cloning, Protein Expression, and Characterization of Interleukin 1 Alpha
Advisor: S. Thallapuranam



Journal of Physical Chemistry B, volume 123, pages 8034-8047 (Sept 26, 2019), https://pubs.acs.org/doi/abs/10.1021/acs.jpcb.9b06034

Chemistry Doctoral Student Achieves Cover Feature

Doctoral student **Matthew McKay**, who recently defended his Ph.D. dissertation, has achieved a cover feature in the Sept 26, 2019, issue of the Journal of Physical Chemistry B. With his advisors, Professors Roger Koeppe and Denise Greathouse, and coauthor Riqiang Fu of the National High Magnetic Field Lab at Florida State University, McKay published the article "Breaking the Backbone: Central Arginine Residues Induce Membrane Exit and Helix Distortions Within a Dynamic Membrane Peptide." Notably, McKay discovered a rare distortion of a protein alpha-helix to a more tightly wound 3-10 helix at the surface of a lipid-bilayer membrane. The work is important for understanding the principles that undergird the structures and vital functions of the numerous proteins in cell membranes.

Chemistry Doctoral Student Successfully Defends Dissertation

Sep. 11, 2019 | https://news.uark.edu/articles/49901/chemistry-doctoral-student-successfully-defends-dissertation

Matthew McKay, a graduate student in chemistry and biochemistry, successfully defended his doctoral dissertation titled "Rotational Tuning of Transmembrane Helix Properties Based on the Precise Placements of Aromatic and Charged Residues."

Photo Submitted

Matt McKay

Under the guidance of his adviser, professor Roger Koeppe, McKay used solid-state deuterium magnetic resonance and other biophysical experiments to characterize the interactions between peptides and lipids that govern the biological functions of diverse sets of membrane proteins, including cell signaling proteins, transport proteins and others. McKay has published portions of his work in the *Biophysical Journal*, *Biochimica et Biophysica Acta – Biomembranes*, and the *Journal of Physical Chemistry*.

McKay came to the University of Arkansas from Ursinus College in Collegeville, Pennsylvania. He will continue his research with a postdoctoral appointment in chemistry and biophysics at the Massachusetts Institute of Technology.

Sin Limites – Middle School Enrichment Program

Denise Greathouse partnered with Luis Restrepo from the Department of World Languages, Literature and Cultures at the University of Arkansas, to teach a chemistry lab, Isolation of DNA from Blueberries, to local middle-school students participating in the *Sin Limites* ("No Limits"): Latino Youth Biliteracy Project. *Sin Limites*, now in its 9th year, is a 2-week summer enrichment program for 5-7th grade Spanish heritage speakers. *Sin Limites* seeks to enhance the literacy of students in both Spanish and English while introducing them to the idea of higher education. The participants are mentored by University students to develop reading and writing skills in their home language, to gain deeper understanding of their cultural heritage, and to promote academic excellence.
Senior graduate students **Matt Mckay** and **Fahmida Afrose**

Courtesy of ACS

and incoming graduate student **Matthew Brownd** assisted with teaching the science lab in Discovery Hall on Friday June 7. The middle-school students were introduced to laboratory skills and the concept of nucleic acids are carriers of genetic information.

The students crushed blueberries in detergent, hot water and salt to rupture the cell membranes and release the cell contents, filtered the mixture through coffee filters, and precipitated the DNA with cold ethanol. Many thanks are given to **Chris Mazzanti** and the chemistry and biochemistry department for the use of the chemistry labs. The program is sponsored in part by a 21st Century Community Learning Center federal grant and the World Languages, Literature and Cultures Department.

Four University of Arkansas Students Named 2019 Fulbright Scholars

June 05, 2019 | https://news.uark.edu/articles/48335/four-university-of-arkansas-students-named-2019-fulbright-scholars | abridged

Two University of Arkansas seniors and two graduate students have been awarded Fulbright U.S. Student Program awards for the upcoming academic year.

Anthony Azzun of Bolivar, Missouri; Christopher Cowan of Overland Park, Kansas; and Sarah Kouchehbagh of Fayetteville received English teaching assistantships. Chen-Bo Fang of Little Rock received a study/research award.

These four students join over 2,100 U.S. citizens who will conduct research, teach English and provide expertise abroad for the 2019-2020 academic year through the Fulbright U.S. Student Program. Recipients of Fulbright awards are selected on the basis of academic and professional achievement, as well as their record of service and leadership potential in their respective fields.

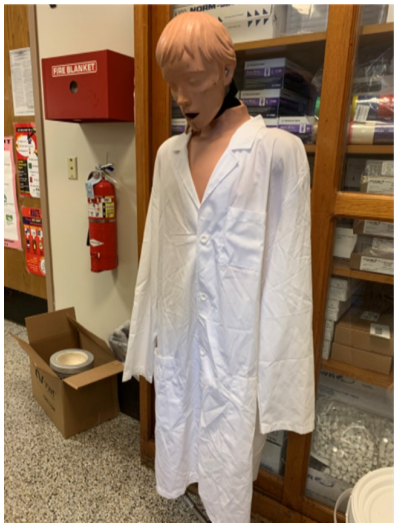
The Fulbright Program is the U.S. government's flagship international educational exchange program and is designed to build lasting connections between the people of the United States and the people of other countries. The Fulbright Program is funded through an annual appropriation made by the U.S. Congress to the U.S. Department of State. Participating governments and host institutions, corporations and foundations around the world also provide direct and indirect support to the program, which operates in over 160 countries worldwide.

Anthony Azzun, an honors biochemistry senior with minors in biology, French and Spanish, will complete his English teaching assistantship in Andorra, an independent principality located between France and Spain in the Pyrenees mountains.

University Relations
Anthony Azzun

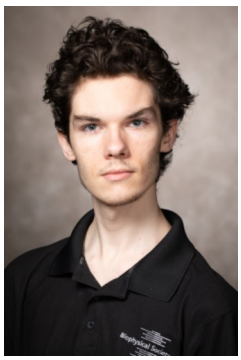
Azzun is a Toller Honors College Fellow and Presidential Scholar in the J. William Fulbright College of Arts and Sciences. He has been involved with the Volunteer Action Center, as a group leader with the Conversation Club and as an Honors College Ambassador. He has also volunteered in the community as a library tutor through the Boys and Girls Club and at Tri Cycle Farms. He is the recipient of the President's Volunteer Service Award in recognition of his community service, and the Gearhart Service Award for his outstanding service to the Honors College. He has conducted undergraduate research with Hassan Beyzavi, assistant professor of chemistry. Azzun plans to complete medical and doctoral degrees and pursue international medical work. "I am incredibly excited and grateful for the opportunity to teach American culture through the Fulbright Scholarship," Azzun said. "Diversity education in particular has always been a passion of mine, and I cannot wait to share what I have learned during my time as a Razorback with students in Andorra."

Hood testing in the He lab.



Introducing Fresh Faces - Incoming Graduate Students of Fall 2019

Justin Barrett
CEMBPH



Matthew Brownd
CHEMPH

Rachel Cherry
CHEMPH

Samuel Conlin
CHEMPH

Meutia Hanafiah
CEMBMS

Fernanda Hernandez
Sanchez CHEMPH

Hayden Jumper
CHEMPH

Babitha Machireddy
CHEMPH

Megan Magness
CHEMPH

David May
CHEMPH

Phuc Phan
CHEMPH

Nicholas Rathke
CHEMPH

Miranda Sanders
CHEMPH

Azedeh Tavousi
Tabatabaei CHEMPH

Fall 2019 Incoming Class of Graduate Students,

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Koeppe Recognized for Service as ABI Institutional Director at University of Arkansas

Dec. 09, 2019 | https://news.uark.edu/articles/51774/koeppe-recognized-for-service-as-abi-institutional-director-at-university-of-arkansas

Science and engineering researchers at the University of Arkansas use research awards from the Arkansas Biosciences Institute to improve the health of Arkansans and prevent smoking-related illnesses.

Seed funding from the institute, a statewide consortium consisting of five research institutions, often enables researchers to produce preliminary results that help them and the university compete for large grants from federal agencies, such as the National Science Foundation and the National Institutes of Health.

Chieko Hara, University Relations

From left, Dan Sui, vice chancellor for research and innovation; Roger Koeppe, Distinguished Professor of chemistry and biochemistry; and Robert "Bobby" McGehee, executive director of Arkansas Biosciences Institute and dean at UAMS Graduate School

As the U of A's institutional director and ABI representative for 11 years, Roger Koeppe, Distinguished Professor of chemistry and biochemistry, helped many colleagues secure funding from the institute.

Koeppe was recognized for his service Thursday during a faculty town hall meeting to discuss future funding priorities and strategies of the Arkansas Biosciences Institute. The meeting was hosted by Dan Sui, vice chancellor for research and innovation.

"ABI funds have made a huge difference on this campus, certainly in terms of biosciences research, but also as leverage to attract and recruit top investigators," Sui said. "Obviously, Roger has been responsible for so much its success on this campus, and we want to recognize his enormous contribution."

Earlier this semester, Chancellor Joe Steinmetz appointed Sui to serve as the new ABI institutional director. The Arkansas Biosciences Institute was established as a result of Arkansas' share of the 1998 nationwide tobacco settlement.

Health care leaders in the state sought a productive way to disperse the state's share of the settlement. The Arkansas Biosciences Institute was created as a conduit for research that could help reduce or prevent smoking-related illnesses.

Arkansas voters endorsed the proposed Tobacco Settlement Proceeds Act of 2000, and the Arkansas Legislature enacted the provisions of that proposal as Acts 1569 through 1580 of 2001. Part of that legislation established the institute as a consortium of five research institutions: the University of Arkansas, the University of Arkansas System Division of Agriculture, the University of Arkansas for Medical Sciences, Arkansas State University and Arkansas Children's Hospital.

Since ABI's beginning, scientists at these institutions have focused on biomedical and agricultural research with medical implications.

Robert "Bobby" McGehee, executive director of the Arkansas Biosciences Institute and dean at University of Arkansas for Medical Sciences Graduate School, also recognized Koeppe during Thursday's meeting. He and Koeppe served together for more than a decade.

McGehee said Arkansas is one of only two states that uses all of its tobacco settlement money for heath initiatives and healthcare research. Sui said the university will continue to use ABI funds to make new strategic investments in biosciences research.

On the Go

Paul Adams (invited)
Biochemical and Biophysical Approaches to Characterize the Molecular Basis of Abnormal Cell Signaling Function Involving Ras-Related Proteins
University of Arkansas, Fayetteville
Faculty Speaker for the Fall 2019 Arkansas Biosciences Institute Research Symposium.
Arkansas State University, Jonesboro, AR September 25, 2019

Peter Pulay
Keynote Talk at the Southwest Theoretical and Computational Chemistry 2019 meeting (SWTCC2019), Oct. 25-27, 2019

Joshua Sakon, Perry Caviness
Structure and function of ColH from Hathewaya histolytica.
Gordon Research Conference-Collagen
New London, NH, July 15-July19, 2019

Joshua Sakon, Cody Brazel
Structure and function of ColG from Hathewaya histolytica.
Gordon Research Conference-Collagen
New London, NH, July 15-July19, 2019

Joshua Sakon (invited)
Structure and function of collagenases from Hathewaya histolytica.
VitaCyte
Indianapolis, IN, July 23-July24, 2019

Joshua Sakon (invited)
Structure and function of collagenases from Hathewaya histolytica.
Nippi, Inc.
Toride, Ibaraki, Japan July 29, 2019

Honors, Accomplishments & Awards

Paul Adams
Honored as a Minority Access National Role Model in the category of Research Faculty. *Please see page 20 for more details.*

T.K.S. Kumar
Appointed to Editorial Board of the Journal of Biological Chemistry (JBC) for a second term from September 19 , 2019 to December 31, 2024. JBC is the Official Journal of the American Society of Biochemistry and Molecular Biology (ASBM.) It is one of the oldest journals in the field with its first publication dated 1905.

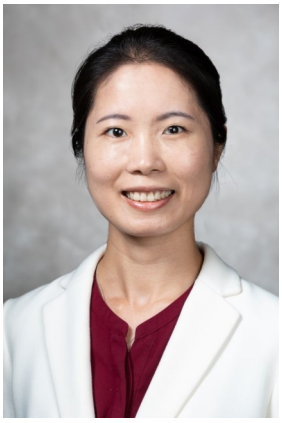
Peter Pulay
Elected to the Honorary Board of the International Society for Theoretical Chemical Physics at the Norwegian meeting of the Society. The board has now 19 members, including two Nobel prize winners, and professors or former professors from Oxford, Cambridge, Harvard, Jerusalem, Cal Tech, Berkeley, and now the University of Arkansas.

Peter Pulay
Invited to write a Perspective review article for *Physical Chemistry Chemical Physics*, the European physical chemistry journal, by the Royal Society of Chemistry.

Charles Wilkins
Selected as one of the top 100 Analytical Chemistry Scientists by the journal The Analytical Scientist (October, 2019.) *See more details on page 19.*

Department Announces New Faculty

Sep. 13, 2019 | https://news.uark.edu/articles/49940/department-of-chemistry-and-biochemistry-announces-new-faculty



University Relations
Maggie He

Maggie He joined the Department of Chemistry and Biochemistry as an assistant professor in August 2019.

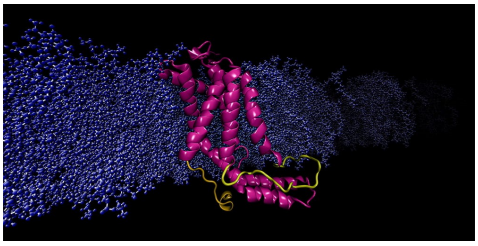
She received her Ph.D. in chemistry from ETH Zurich, M.S. in chemistry from the University of Pennsylvania, and B.S. from the City College of New York. Before joining the University of Arkansas, she was a Swiss National Science Foundation postdoctoral fellow at Massachusetts Institute of Technology.

He's research interests span the areas of organic chemistry and materials chemistry. She is interested in dynamic covalent chemistry, adaptive molecules, functionalization and applications of carbon nanomaterials, and development of carbon nanotube-based sensors. Her research has resulted in 10 journal publications, 27 invited seminars and conference presentations, and two patents.

He is excited to launch her Interdisciplinary research program in functional materials and sensors and the chemistry and biochemistry department is excited to have her on the team.

Study Shows Limitations of Method for Determining Protein Structure

Matt McGowan | Oct 8, 2019 | Research News | https://researchfrontiers.uark.edu/study-shows-limitations-of-method-for-determining-protein-structure/



A new study by chemists at the University of Arkansas shows that X-ray crystallography, the standard method for determining the structure of proteins, can provide inaccurate information about a critical set of proteins – those found in cell membranes – which in turn could be leading to poor and inefficient drug design.

"Two-thirds of all drugs, including those used for chemotherapy, target proteins found on cell membranes," said **Mahmoud Moradi**, assistant professor of chemistry and biochemistry in the J. William Fulbright College of Arts and Sciences.

"Unfortunately, X-ray crystallography, the gold standard for determining the structure of proteins, has many limitations when dealing with those found in the cellular membrane. Our work exposes, and in many ways, explains these limitations."

Considered the workhorse molecules of cells, proteins are responsible for nearly every task in living systems. Some proteins live inside cells, and some reside on the cell's membrane, an outer layer of lipids that separates the cell from its external environment. Membrane proteins are critically important because they regulate the exchange of information and materials between the cell and its environment, a vital task for survival and normal function of the cell because any disorder in protein function can result in disease.

The study of protein function is necessary for understanding the molecular basis of disease. To do this, researchers have relied on X-ray crystallography, the primary tool for determining the shape and structure of proteins. X-ray crystallography is also essential for the purpose of designing drugs that efficiently manipulate the function of proteins. However, the study of membrane protein structure is difficult because their native environment is not compatible with X-ray crystallography. Researchers must remove the proteins from their native environment and place them in an artificial lipid environment before applying the technique.

Moradi and Thomas Harkey – an undergraduate student at the time and now a medical student at the University of Arkansas for Medical Sciences – addressed this problem from a different angle. For roughly two years, they used a supercomputer at the Arkansas High Performance Computing Center to run continuous, microsecond-level computations simulating the molecular dynamics of YidC2, a membrane protein with a crystallographically unresolved cytoplasmic loop in its molecular structure. Cytoplasmic loops are known to have functional significance in membrane proteins.

Moradi and Harkey's simulations demonstrated that YidC2's cytoplasmic loop stabilized the entire protein, particularly the C1 region, a potentially important area for drug design. Highly polar or charged lipid headgroups interacted with and stabilized the loop. This finding demonstrated that unresolved loops of membrane proteins could be important for the stabilization of proteins, despite the apparent lack of molecular structure.

"Typically, if part of a protein is not resolved in X-ray crystallography, it is interpreted as lacking a particular structure," Moradi said. "We show that for membrane proteins and particularly parts of the protein that interact with the cell membrane, this interpretation is not accurate and could be misleading. We think that the alternative explanation for the disorder could be that the protein is not studied in its native membrane environment."

Moradi said their results also demonstrated that computational chemistry and supercomputing technology can be used to model membrane proteins more accurately in an environment that mimics their physiological environment.

University Relations
Mahmoud Moradi

The Power and The Passion: The Power List 2019 highlights the strengths of analytical science – and the community behind it

Matthew Hallam | 10/17/2019 | Opinion | https://theanalyticalscientist.com/business-education/the-power-and-the-passion

The Power List 2019 has landed – a celebration of the top 100 most influential figures in analytical science.

Curating the list (collecting nominations received from across the globe, working closely with our judging panel, and corresponding with all 100 nominees) has been a lengthy process – but also a privilege. Few fields are supported by a workforce that can lay claim to the level of dedication and passion that our community exudes. Whether speaking of fundamentals or applications, biology, the environment or beyond, it's clear to see that immersion in this field is closely tied to a real belief in its purpose. And that's likely why the field is so highly connected – and brimming with positivity. As Paul Bohn notes, we have "terrific colleagues all over the world," and this translates not only into prime opportunities for enjoyable and fruitful collaboration, but also into a tightly knit network of support that helps propel each of us forward to tackle the problems ahead.

To thrive, we must move with the times; as such, to quote Caroline West, analytical chemistry is "a dynamic science that changes rapidly." The perpetual progress in our field is highlighted by advances in instrument miniaturization, usability and portability, and the application of artificial intelligence and automation. Increasingly, instrumentation is moving away from labs and into the real world. What's more, the continuous streamlining of the analytical process means that these increasingly portable technologies are providing data that can be interpreted and used in record time.

Of course, all of these endeavors feed into a single end goal (likely the reason we were drawn to science the first place): to understand our universe and improve lives. For analytical scientists, this mission can take many paths – medicine, agriculture, technology, space exploration, and many more – but, whichever direction we choose, we rarely have to walk alone, instead working within increasingly diverse, passionate and motivated teams. I'm sure Ljiljana Paša-Tolić isn't the only one that would say they love "being part of this great community." Overall, there are many lessons to be learned from the Power List, but they can be simply summarized for the entire analytical community: we're a busy bunch and we love what we do.

Charles Wilkins, distinguished professor of chemistry and bio-chemistry in the J. William Fulbright College of Arts and Sciences, was named to the list in October 2019.

Career highlight: Development of the first Fourier Transform Ion Cyclotron Resonance mass spectrometer, which played a key role in commercialization of the technique.

Best advice received: To explore new areas that others have not – this has led me in a number of novel directions in my research life.

University Relations

Charles Wilkins

Research Associate Professor Denise Greathouse, Ph.D., Retires

Research Associate Professor **Denise Greathouse**, Ph.D., retired on October 4, 2019 after 31 years of dedicated service to the Department of Chemistry and Biochemistry and the University of Arkansas. During this entire period, Dr. Greathouse has been the mainstay and leading expert for

University Relations

Denise Greathouse

peptide synthesis on the Fayetteville campus. Along with Roger Koeppe, she designed a number of useful model helical peptides that span lipid-bilayer membranes and facilitated solid

-state deuterium NMR methods for characterizing the biophysical properties of such transmembrane helices.

With her multiple talents, Denise fulfilled multiple roles, effectively "wearing many hats." Denise worked closely with students, served as co-PI for several National Science Foundation grants and coauthored more than 70 research articles.

Her teaching, advising, mentoring and supervising skills have been invaluable for chemistry majors and pre-medical students, including numerous honors students and graduate students, not to mention her service to Arkansas INBRE, *Sin Limites* outreach program, Howard Hughes Medical Institute, and as "unofficial" department photographer.

When the need was there, Denise would step up to the plate. While her service will be missed, we will look forward to seeing Denise Greathouse back in the Chemistry Building from time to time.

Adams receives Minority Access National Role Model in the category of Research Faculty honor

This prestigious award recognizes inspirational Role Models in various categories to inspire others to emulate them, and thereby increase the pool of scholars and professionals who will find cures for illnesses or solve technological problems or address social disparities in society.

Distinguished Role Model honorees are assembled not for self-adulation but rather as a part of a well-designed developmental strategy.

University Relations

Paul Adams

The *White House Office of Science and Technology* warns that if America is to sustain its remarkable growth based on technology, it must increase the flow of young people - including minorities - into sciences. The *National Institutes of Health* warns that if we are to reduce the disparities that are currently great between the health of minorities and that of the general population, we must increase the flow of relevant researchers entering the biomedical research field in order to find cures for the illnesses that disproportionately affect minorities (www.minorityaccess.org.)

Minority Access is convinced that it can help simply by parading before its vast network of high-performing young people, real, live, believable role models.

Paul Adams received this award during the Twentieth National Role Models Conference, held September 26 – 29, 2019 in Washington D.C. In addition to receiving the award, Adams also participated in a panel session on mentoring.

Committee on Chemists with Disabilities debuts accessible periodic table

Maria T. Dulay | https://cen.acs.org/acs-news/meetings/Committee-Chemists-Disabilities-debuts-accessible/97/i36 | Chemical & Engineering News | ISSN 0009-2347 | Copyright © 2019 American Chemical Society

At the American Chemical Society Fall 2019 National Meeting in San Diego, the ACS Committee on

Members of the Committee on Chemists with Disabilities, including the U of A's own Dr. **Stefan Kilyanek**, pose with the periodic table.

Courtesy of Maria Dulay

Chemists with Disabilities displayed an accessible periodic table that featured braille and sign language 3-D printed onto every element tile. The project celebrates the International Year of the Periodic Table and acknowledges the scientists with disabilities who have contributed to the creation of the periodic table since its discovery 150 years ago by Dmitri Mendeleev.

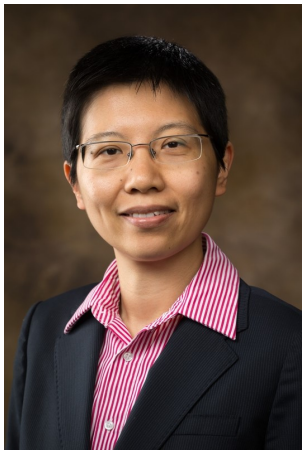
Many attendees visited the display, including Sir Martyn Poliakoff, known for *The Periodic Table of Videos*. The periodic table was created as part of a yearlong collaboration with students from Michigan State University's K–12 science, technology, engineering, and mathematics (STEM) program in Midland and with funding from Dow.

The letter symbols that easily identify the elements were intentionally absent from each tile to simulate the challenges that a person with a disability may encounter in accessing the table. "People with disabilities are people with abilities," said Adeleye Okewole, an educator from Nigeria who visited the display.

Researchers Build Catalyst to Generate Electrical Energy From Ethanol

June 12, 2019 | https://news.uark.edu/articles/48370/researchers-build-catalyst-to-generate-electrical-energy-from-ethanol?utm_source=Newswire&utm_medium=email2019-06-12&utm_campaign=researchers-build-catalyst-to-generate-electrical-energy-from-ethanol | abridged

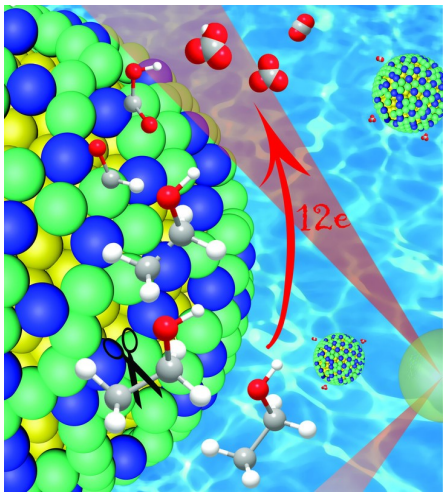
Jingyi Chen, associate professor of chemistry and biochemistry at the University of Arkansas, worked with scientists at the U.S. Department of Energy's Brookhaven National Laboratory to develop a highly efficient catalyst for generating electrical energy from ethanol. Ethanol is an easy-to-store liquid fuel that can be produced from renewable resources. However, its potential as a source for electrical energy has previously been blocked by the carbon-carbon bond that forms the ethanol molecule.



University Relations
Jingyi Chen

Chen and the Brookhaven researchers used a process called electro-oxidation, through which they discovered the ideal chemical pathway to break the carbon bonds and release more electrons.

As a visiting scientist at Brookhaven, Chen developed a synthesis method to make the core-shell catalyst by depositing platinum and iridium on gold nanoparticles, which is the key to the new catalyst's performance.



Chen's method of depositing platinum and iridium formed "monoatomic islands" across the surface of the gold nanoparticles. These islands broke the carbon-carbon bonds in the ethanol molecules, while initially leaving hydrogen atoms attached to prevent the formation of catalyst-poisoning carbon monoxide, and thus facilitating complete oxidation and release of the liquid fuel's stored energy.

The catalyst could enable the practical use of ethanol fuel cells as a high-energy, high-density source of electrical power, independent of the power grid. Compared to batteries, ethanol fuel cells are lightweight and can provide sufficient power to operate small vehicles, such as drones.

The team was led by Jia Wang, a Brookhaven Lab chemist, and included Chen and Zhixiu Liang, a graduate student from Stony Brook University.

The researchers' findings were published in the *Journal of the American Chemical Society*.

Fulbright College Announces 2019 Annual Faculty Teaching and Research Awards

June 13, 2019 | https://news.uark.edu/articles/48372/fulbright-college-announces-2019-annual-faculty-teaching-and-research-awards | abridged

The J. William Fulbright College of Arts and Sciences at the University of Arkansas has named the 2019 winners of its annual teaching and research faculty awards. The recipients were each selected for their demonstrated excellence in these areas.

FULBRIGHT COLLEGE MASTER RESEARCHER AWARD
The honor is awarded to up to three outstanding researchers. Awardees are chosen based on a nomination letter, the nominee's research accomplishments documented in a one-page summary of his or her research outlining its importance, a list of 10 publications, supporting evidence of exceptional performance in research, his or her curriculum vitae and an evaluation by the departmental chairperson.

University Relations

Feng Wang

Feng "Seymour" Wang, professor of chemistry in the Department of Chemistry and Biochemistry, whom his department chair, Wesley A. Stites, described as a rising star in theoretical chemistry who "will continue to do great things that advance chemical understanding at a fundamental level and that will also have the practical effect of making our lives better."
Wang is a recipient of the largest individual investigator award given by the National Institutes of Health, an R-01 grant. Stites added, "The fact that he has been funded by both the NIH and the National Science Foundation … shows that he is tackling not just questions of purely intellectual interest, but problems with likely impact on human health."

Coridan to Receive Early Career Award From U.S. Department of Energy

Aug. 02, 2019 | https://news.uark.edu/articles/49587/coridan-to-receive-early-career-award-from-u-s-department-of-energy

The U.S. Department of Energy announced today that **Robert Coridan**, assistant professor of chemistry and bio-chemistry, will receive an Early Career Research Award for his work on improving the efficiency of chemical reactions that convert solar energy into chemical fuels. Coridan will receive $750,000 over five years.

University Relations

Rob Coridan

The award will enable his research team to focus efforts on the optical and photochemical properties of defects in randomly distributed films of nanosphere colloids — nanoscopic glass and plastic beads. With a better understanding of these properties, the researchers can design scalable structured materials to increase the efficiency of light absorption that drives fuel-forming chemical reactions.

“The hope is that we can choose the correct combinations of colloids to get structures that form light-trapping cavities, thus amplifying the intensity of light and rate of photochemical processes in any material we place there,” Coridan said.

The goal of this research is to devise easy-to-fabricate and scalable nanostructures that maximize a material's ability to convert the sun’s energy into chemical bonds, or fuels, a process similar to photosynthesis in plants.

The Department of Energy’s Office of Science selected 73 scientists from across the nation to receive significant funding for research as part of department’s Early Career Research Program. To be eligible for the department award, researchers must be untenured, tenure-track assistant or associate professors at a U.S. academic institution or a full-time employee at the department’s national laboratory who received a doctorate within the past 10 years. Research topics are required to fall within one of the department's Office of Science's six major program offices:

- Advanced Scientific Computing Research
- Basic Energy Sciences
- Biological and Environmental Research
- Fusion Energy Sciences
- High Energy Physics
- Nuclear Physics

Awardees were selected from a large pool of applicants based at universities and national laboratories. Selection was based on peer review by outside scientific experts. Projects announced today are selections for negotiation of financial award. The final details for each project award are subject to final grant and contract negotiations between DOE and the awardees.

University of Arkansas Named to Alliance Aimed at Diversifying STEM Faculty

Nov. 13, 2019 | https://news.uark.edu/articles/50583/university-of-arkansas-named-to-alliance-aimed-at-diversifying-stem-faculty

The University of Arkansas is one of 20 public research universities added to a collaborative coalition aimed at enhancing faculty diversity and implementing inclusive practices in the STEM disciplines — science, technology, engineering and mathematics.

Through "Aspire: The National Alliance for Inclusive and Diverse STEM Faculty," the U of A will conduct an extensive self-assessment process to inform the creation of a three-year action plan that will develop additional policies and procedures to drive recruitment, hiring and retention of diverse STEM faculty while supporting inclusive teaching, advising and research mentoring.

Additionally, the program will connect the U of A with resources and services to assist in the plan's implementation, including access to dozens of professional organizations, assessment tools and models, funding opportunities and a leadership academy.

"This alliance will be transformative for our campus and is the latest in a portfolio of strategies we've developed to greater diversify our faculty ranks," said Yvette Murphy-Erby, vice chancellor for diversity and inclusion. "The action plan we will form through'Aspire' will have ripple effects across our entire campus, helping us identify additional strengths and opportunities while validating strategies that we can implement across all our campus units."

The effort is funded by the National Science Foundation and co-led by the Association of Public and Land-grant Universities and the Center for the Integration of Research, Teaching, and Learning at the University of Wisconsin-Madison. The U of A was part of the second cohort added to the alliance, which now totals 35 schools.

Photo Submitted

Paul Adams, associate professor of biochemistry, works with a student researcher.

"We are thrilled to be involved with this important initiative that will build on our efforts to recruit, retain and develop quality faculty from all walks of life, in addition to supporting inclusive practices on our campus," said Jim Coleman, provost and executive vice chancellor for academic affairs. "Further diversifying our STEM faculty will lead to greater diversity among our students in these fields, bringing new perspectives that will enhance our work. The Chancellor and I are extremely supportive of this effort and look forward to working with our campus and other institutions as part of this alliance."

A 15-member task force comprised of university administrators and faculty members will help drive the effort on campus.

Task force members are:

- Jim Coleman, provost and executive vice chancellor for academic affairs
- Yvette Murphy-Erby, vice chancellor for diversity and Inclusion
- Kathryn Sloan, vice provost for faculty affairs
- Kim Nedy, dean of the Graduate School and International Education
- John English, dean of the College of Engineering
- Anna Zajicek, associate dean in the J. William Fulbright College of Arts and Sciences and chair in the Department of Sociology
- Heather Nachtmann, associate dean for research in the College of Engineering and professor of industrial engineering
- Debbie McLoud, associate vice chancellor for administration and director of employee services
- **Matt McIntosh,** vice chair of the Department of Chemistry and Biochemistry
- Marcia Shobe, senior research fellow in the Office for Diversity and Inclusion

- Christa Hestekin, associate professor and holder of the Ansel and Virginia Condray Endowed Professorship in Chemical Engineering
- Beth Kegley, professor and elected president of the American Society of Animal Science
- Timothy Kral, professor of biological sciences
- Robert Pilgrim, administrative data manager in the Office for Research Support and Sponsored Programs
- Kevin Brady, associate professor of educational leadership, curriculum and instruction

"Provost Coleman, Dr. Murphy-Erby and I are very excited to be working with such a talented and experienced task force for this important project," said Shobe, who is also the faculty lead for the program at the U of A. "Team members comprise leaders at the university in STEM, human resources, research analytics, and the Faculty Senate, all of whom are prepared to effect STEM culture change in recruitment, hire and retention policies and practices and to enhance STEM teaching, research and service initiatives."

INBRE Conference 2019

The Arkansas INBRE Research Conference was held in Fayetteville, AR on Friday, October 25 and Saturday, October 26. The conference gives undergraduate students from Arkansas and regional colleges the opportunity to present their research. Twenty-six institutions and over 400 individuals participate annually.

Networking, recruiting, and building collaborations are all aspects of this event. The keynote speaker this year was Dr. Carrie Partch of the University of California Santa Cruz. The schedule included invited faculty and student speakers, a poster session and a dinner before the keynote address. Students competed in both oral and poster competitions. A complete list of award winners can be viewed at https://inbre.uark.edu/.

The Arkansas INBRE Research Conference is sponsored by Arkansas INBRE and is hosted by the departments of biological sciences, physics, and chemistry and biochemistry, Fulbright College of Arts and Sciences, University of Arkansas.

The Arkansas IDeA Network of Biomedical Research Excellence (Arkansas INBRE) is funded by a grant from the National Institute of General Medical Sciences (NIGMS), under the Institutional Development Award (IDeA) Program of the National Institutes of Health (NIH). The IDeA program was established for the purpose of broadening the geographic distribution of NIH funding for biomedical and behavioral research.

Currently NIGMS supports INBRE programs in 23 states and Puerto Rico. The Arkansas INBRE builds on the successful Arkansas Biomedical Research Infrastructure Network (BRIN) program that was established in 2001 under a grant from NCRR. The Arkansas BRIN established a statewide network that links Arkansas institutions of higher education to establish and maintain a statewide infrastructure in support of growing efforts to build capacity for biomedical research in Arkansas.

The Arkansas INBRE Research Conference is sponsored by Arkansas INBRE and is hosted by the departments of biological sciences, physics, and chemistry and biochemistry, Fulbright College of Arts and Sciences, University of Arkansas. This year's Conference will be Nov. 6-7, 2020.

Denise Greathouse

Award winners present for the awards ceremony.

Denise Greathouse, University of Arkansas Research Associate Professor Emeritus

Arkansas INBRE Research Conference registration, recruiting, networking, and presentations. Center Photo is keynote speaker, Dr. Carrie Partch—UC Santa Cruz.

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MATT MCINTOSH, DEPT CHAIR
HEATHER JORGENSEN, EDITOR

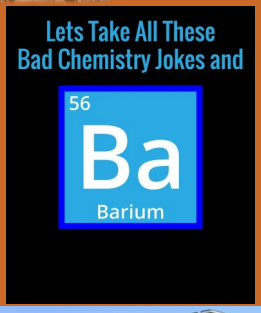
CHEM 119
1 University of Arkansas
Fayetteville, AR 72701

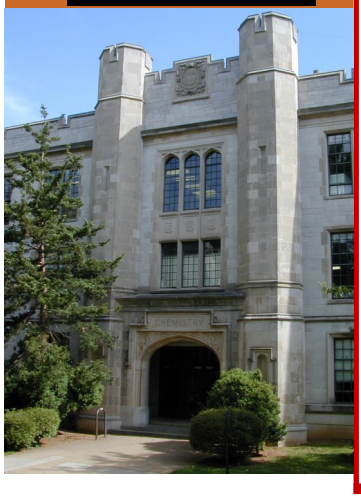
479.575.4601
cheminfo@uark.edu

chemistry.uark.edu

Department of Chemistry and Biochemistry *
University of Arkansas

MAHSA'S MIRTH





Calendar of Events

DEPARTMENT SEMINAR | 3:30PM | CHEM 144
February 24 | Martin Head-Gordon, University of California Berkeley | **Pulay Lecture**
March 02 | Tadhg P. Begley, Texas A&M University | **Fry Lecture**
March 09 | Joshua Snyder, Drexel University
March 16 | Weitao Wang, Duke University
March 30 | Neil S. Ostlund, University of Florida
April 06 | Sarah Goforth and Carol Reeves, University of Arkansas
April 13 | Jay Unruh, University of Kansas
April 20 Gregory Dudley, West Virginia University

February 17 | Biophysical Society Meeting
April 27 | Honors & Majors Day
May 17—July 24 | NSF REU PROGRAM

The department of chemistry and biochemistry at the University of Arkansas strives for excellence in research, teaching and service in chemistry - the central science. We aspire to positions of leadership regarding the discovery of new scientific knowledge, the training of students, and the economic development of the State of Arkansas. We seek to recruit and retain a diverse group of the best faculty, students and staff to address the challenges of the future through interdisciplinary and multidisciplinary research and education.

Lab Safety Tip:

by Chris Mazzanti

We know to check glassware for cracks and stars before heating but you should also check the surface of hot plates as well; they will break if there are defects in the surface - the same as glassware.

General Safety Tip:

Hygiene means more than brushing your teeth and bathing - Hygiene is a noun meaning conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness. **Please dispose of your food waste and other trash appropriately.**

Library Hours

CHBC Library | CHEM 225
libinfo.uark.edu/chemistry

Saturday - Sunday	CLOSED
Monday – Thursday	8:00am – 9:00pm
Friday	8:00am – 6:00pm

Closed on all University Holidays : January 20, March 23-27.

The **chemistry and biochemistry library resources** can be accessed in the following **LibGuides**: http://uark.libguides.com/content.php?pid=110953.
Theses and dissertation resources can be found on the following **LibGuides**: http://uark.libguides.com/content.php?pid=123035 &sid=1057466.
For more information: Check the Libraries' web site - libinfo.uark.edu - for updated information on hours and services. Library hours are also available by dialing 479-575-2557.