

CHEMISTRY NOTATIONS

DEPARTMENT OF CHEMISTRY 2019 NEWSLETTER



Lightboard Project

Chemistry Department
acquires new tool to
engage in student
learning

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DOE Traineeship

Program develops a new
generation of highly
skilled radiochemists

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A MESSAGE FROM THE CHAIR

Greetings Cougar chemists! As I'm writing this message, summer seems to be here in full force on the Palouse with very warm sunny days, but for those of you that have spent much time in Pullman you're probably thinking I might be a little optimistic considering it's just early June. In any event, you'll find lots of news in the current issue that will get you caught up on what has been happening here in the Chemistry Department regardless of what your local weather happens to be. In the last issue, we introduced you to the newly renovated Troy Hall where four faculty members are now operating state-of-the-art synthetic chemistry research programs. Starting this fall, Chemistry will be operating a new Chemistry Learning and Assessment Center that will occupy nearly the entire top floor of this building. This space will provide a novel one-stop location for students to get help from both teaching assistants and faculty for both general and organic chemistry. This should be a fantastic resource for the thousands of students who make their way through Chemistry each year.

Our faculty continue to do an amazing job, both in the classroom and in their research laboratories. At the yearly College of Arts and Sciences Appreciation and Recognition Social (page 7), Chemistry cleaned up with six awards distributed among both faculty and staff. This year also marked the well-deserved promotions to Professor for Drs. Jim Brozik and Nathalie Wall. This turned a little bittersweet, however, when Nathalie recently accepted an offer to move to the University of Florida in their Chemical Engineering department where she will start this August. She will be very missed here in the Department, but we wish her all the best in sunny Florida.

In other faculty news, we will have a new addition to the Department this fall, Dr. Jim Boncella, who is currently Deputy Group Leader at Los Alamos National Laboratory. He will join us as a Professor of Chemistry. Dr. Boncella's position will be jointly shared with Pacific Northwest National Laboratory, but his research labs will be located in Pullman. Besides his faculty appointment, Jim will be the new Director of the PNNL-WSU Nuclear Science and Technology Institute, taking over the reins from Prof. Aurora Clark who was instrumental in getting the institute off the ground. Dr. Boncella's research interests lie in the area of synthetic chemistry of actinide complexes, as well as the development of metal catalysts. We will share more details on Jim in the next issue. There is more good news in terms of faculty hires: we have been approved to begin the search for two new assistant professors in the general area of radiochemistry. Hopefully I will be able to announce additional new faculty members in the next issue as well!

I hope you enjoy catching up on all the goings-on here in the Chemistry Department. Stay in touch by writing us (PO Box 644630 · Pullman, WA · 99164-4630), sending an email (chemistry@wsu.edu), visit us on Facebook (Department of Chemistry at Washington State University), or if you happen to find yourself in Pullman, the invitation is always open to drop by for a visit.

Go (Chem) Cougs!

Kirk Peterson
Department Chair
Edward R. Meyer Distinguished Professor

P.S. To learn about making a gift to support chemistry education and research, please visit <http://chem.wsu.edu/GiveToChemistry>. Gifts of any size help to enhance the student experience and support top-quality research.



DEPARTMENT OF CHEMISTRY DIRECTORY

FACULTY

Kirk Peterson - Department Chair & Professor - Computational, Physical
Ming Xian - Associate Chair of Graduate Studies & Professor - Biological Systems, Organic

Cliff Berkman - Professor - Biological Systems, Organic
James Brozik - Professor - Analytical, Biological Systems, Materials, Physical
Aurora Clark - Professor - Computational, Materials, Physical and Radiochemistry
Sue Clark - Regents Professor - Analytical, Environmental, Radiochemistry
Brian Clowers - Associate Professor - Analytical
Phil Garner - Professor - Organic
Xiaofeng Guo - Assistant Professor - Physical, Radiochemistry
Zachariah Heiden - Assistant Professor - Environmental, Inorganic, Organic
KW Hipps - Regents Professor - Materials, Physical
Jeff Jones - Professor - Biological Systems, Organic
ChulHee Kang - Professor - Biological Systems, Organic, Physical
David Lee - Assistant Professor - Materials, Physical
Alex Li - Professor - Analytical, Biological Systems, Organic
Rock Mancini - Assistant Professor - Biological Systems, Organic
Ursula Mazur - Professor - Materials, Physical
Peter Reilly - Associate Professor - Analytical
Rob Ronald - Professor - Organic
Nathalie Wall - Professor - Analytical, Environmental, Radiochemistry
Choong-Shik Yoo - Professor - Materials, Physical
Qiang Zhang - Assistant Professor - Inorganic

CLINICAL FACULTY

Paul T. Buckley - Director of General Chemistry & Clinical Associate Professor
Greg Crouch - Associate Chair for Undergraduate Studies & Clinical Professor

Jeremy Lessmann - Clinical Associate Professor
Amy Nielsen - Clinical Assistant Professor
Krista Nishida - Clinical Assistant Professor
Louis Scudiero - Clinical Professor

**To see our current Affiliate and Emeritus Faculty, visit our website at www.chem.wsu.edu*

INSTRUCTIONAL STAFF

Nikki Clark - Undergraduate Academic Coordinator
Michael Finnegan - Instructor
Ryan Rice - General Chemistry Laboratory Supervisor
Dinara Storfer - Instructor
Jackie Zhu - Instructor

SUPPORT STAFF

Trent Amonett - Assistant Director
Lori Bruce - Principal Assistant, Grant Proposals
Lauren Hatley - Fiscal Analyst, Grants
Yoshi Kodama - IT Manager
Stacie Olsen - Graduate Coordinator
Molly Spain - Fiscal Specialist, Purchasing, Travel
Jennica Stiff - Fiscal Technician, Personnel

STOCKROOM STAFF

John Sullivan - Stockroom & Safety Manager
Naomi Hyner - Procurement and Supply Support Specialist
Jayda Spong - Instruction & Classroom Support Technician, General Chemistry
Cole Mercer - Instruction & Classroom Support Technician, Organic Chemistry

PRODUCTIONS

LIGHTBOARD PROJECT



Yoshi Kodama, Paul Buckley and Ryan Rice surrounded by the lightboard equipment

Photo by Yoshi Kodama

WHAT IS A LIGHTBOARD?

by Yoshi Kodama and Ryan Rice

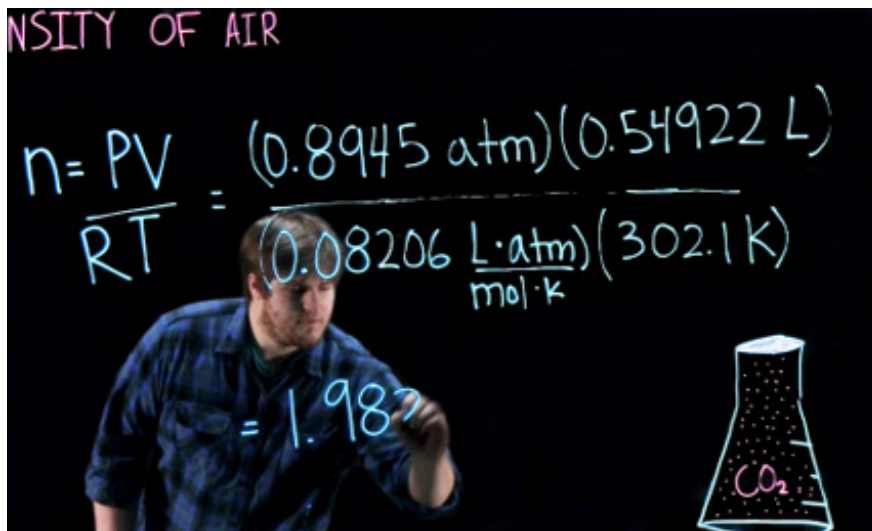
WSU Chemistry just acquired a new tool for reaching out to its students: a Lightboard. Physically there's not much to it. It's essentially a piece of glass with hundreds of LEDs around it. A lightboard serves the same role as a traditional chalkboard, but since it's transparent glass, the presenter can face the audience while writing.

The presenter writes their notations, formulas, artwork, etc., directly onto the glass with fluorescent dry-erase markers in a wide range of color choices. This allows them to be creative and passionate about presenting their material in a more engaging, real-time fashion.

A short (~10 min) video is recorded in a darkened room, then flipped 180° horizontally so the writing appears as normal to the viewer. These videos are on YouTube and you are encouraged to subscribe to our channel. Go to <https://www.youtube.com> and search:

Washington State University:
Chemistry.

Our initial efforts have focused on providing students with 24/7 access to a "Virtual TA" to help them with post-lab reports. The videos complement the lab manual instructions, but do not replace them. Based on initial feedback and comments, students like the videos and find them helpful for their lab work.



We plan to branch out and make "short topic" help videos for the lecture side of classes, and the Organic Chemistry staff has already used the lightboard to create lab safety videos, and videos on lab techniques such as recrystallization and liquid-liquid extraction.

The experience of creating a video is also beneficial to the TA's by helping them build presentation skills, on-screen charisma, and is something unique and noteworthy that they can put on their resume or CV, and provide a link.

With these goals in mind, faculty sponsor Paul Buckley formed Cougar Chem Productions (CCP) and provided the budget necessary to make this project a reality. Fulmer 101 underwent minor renovations and now serves as the CCP proof-of-concept studio. Despite only being functional since the 2018 holiday season, word has already spread around campus that WSU Chemistry has been successfully creating Lightboard video tutorials. We've begun working with the Department of Academic Outreach and Innovations (AOI) to reserve studio time for other departments to leverage the Lightboard project for their own purposes. CCP will soon be moving to a dedicated studio in Troy Hall.

We'd like to sincerely thank Amy Nielsen and Greg Crouch for their initial efforts in bringing the lightboard to Fulmer Hall, and for securing future studio space in Troy Hall. This project would not be possible without their help.



FACULTY

*Taken from the WSU Insider
July 2018*

Amy Nielsen Elected as Executive Director of the PAC-12 Academic Leadership Coalition

Dr. Amy Nielsen, Clinical Assistant Professor in Chemistry and Executive Secretary of the WSU Faculty Senate, has been elected to a three-year term as Executive Director of the PAC-12 Academic Leadership Coalition.

The mission of the PAC-12 Academic Leadership Coalition is to improve the effectiveness and responsiveness of each member school's shared governance organization and to facilitate academic and research cooperation that is jointly beneficial to participating institutions.

In her role, Dr. Nielsen will coordinate PAC-12 ALC staff support, assist in collaborative project implementation, liaise with institutional member institutions, and archive all final collaborative projects for the organization. Dr. Nielsen has a strong commitment to academics and service, and plans to turn that commitment into real action to support all faculty represented by the PAC-12 ALC.

October 2018

Dr. Pete Reilly was awarded a special prize during the opening ceremony for WSU Research Week 2018, presented by WSU's Office of Research. The prize was awarded for submitting the best idea to The National Science Foundation's 2026 Idea Machine, a competition to help set the U.S. agenda for fundamental research in science, technology, engineering, and mathematics (STEM) and STEM education. Dr. Reilly's idea is titled *Ultra-High Mass Spec. The Next Frontier*.

Tenure and Promotion

Dr. James Brozik
Promotion
Professor, effective August 2019

Dr. Nathalie Wall
Promotion
Professor, effective August 2019



Dr. Chulhee Kang and **Dr. James Brozik** set up their booth for Photon Biosciences at SciTech NW 2018 in Seattle WA. The event showcased more than 40 new technologies from Washington's top research institutions that are ready or nearly ready for commercialization.

January 2019

Retired WSU **Professor Ken Nash**, was awarded the Royal Society of Chemistry's Becquerel Medal. First awarded in 1996, this medal is given to a scientist, who over a significant period of time, has made an outstanding contribution to research and/or teaching in Radiochemistry.



Spring 2019

Dr. Rob Ronald was given a special certificate for his 50 years of membership in the American Chemical Society. We are grateful for his many years of service and his dedication to the chemical sciences.

Photo by Yuwei Kan, Lab Coordinator at University of Idaho

Winter 2019

Retired WSU Professor **Herb Hill**, was recognized as a Rhodes College 2018 Distinguished Alumni. Dr. Hill graduated from Rhodes College with his BS in Chemistry in 1967.

March 2019

Dr. Qiang “Jack” Zhang was selected as 1 out of 22 Emerging Investigators by the ACS journal *Crystal Growth and Design*.

You can read more from Jack and the other 21 contributors in the virtual issue. <https://axial.acs.org/2019/03/13/emerging-investigators-in-crystal-growth-design/>



*Dr. KW Hipps is presented with the Sahlin Eminent Faculty Award by WSU President Kirk Schulz, Provost and Vice President Dan Bernardo and CAS Dean Matthew Jockers
Photo by WSU Photo Services*

March 2019

Dr. KW Hipps was honored with the Sahlin Eminent Faculty Award at the Showcase Celebration.

KW's scholarly work pertaining to the fundamental chemistry and physics of interfaces and surfaces has significantly advanced the field of surface science. As an educator, Prof. Hipps has trained and inspired the next generation of chemists in the field.

Dr. Hipps is the only chemist who has received this prestigious award.

May 2019

Dr. Rock Mancini was one of 10 junior faculty to receive a New Faculty Seed Grant.

Rock will develop a new type of reaction to generate synthetic-biologic hybrids, enabling the synthesis of many new biomolecule therapeutics.

COLLEGE OF ARTS & SCIENCES APPRECIATION AND RECOGNITION SOCIAL

“In addition to recognizing some amazing individuals, this annual event brings us together to celebrate the diversity and creativity that powers the College of Arts and Sciences,” Matt Jockers, CAS Dean

Five Department of Chemistry faculty were recognized at this year's social.



NELMI DEVARIE BAEZ
WSU Tri-Cities
Faculty Career Award
Early Career Achievement



AURORA CLARK
WSU Pullman
Faculty Service Award
Excellence in Professional
Service



KW HIPPS
WSU Pullman
Faculty Teaching Award
Excellence in Graduate
Teaching



KRISTA NISHIDA
WSU Pullman
Faculty Service Award
Faculty Peer Mentoring



NATHALIE WALL
WSU Pullman
Faculty Service Award
Outstanding Achievement
in International Activities

DOE TRAINEESHIP IN NUCLEAR AND RADIOCHEMISTRY AT WASHINGTON STATE UNIVERSITY AND COLORADO SCHOOL OF MINES

by Professor Nathalie Wall

The Washington State University and Colorado School of Mines Radiochemistry Traineeship program, funded by the U.S. Department of Energy, was initiated in 2016. The program will develop a new generation of highly-skilled radiochemists with expertise focused on national needs. The selected students follow a two-year training, featuring two-way coursework between WSU and CSM, partnerships with national laboratories, and professional development workshops.

Each student selected for a traineeship take relevant courses available at WSU and CSM and engage with designated scientist(s) at one of the partner national laboratories to work in a research area that match the student interest. The students often work at the national laboratory partner during their summer months, conducting research and developing connections with the national laboratory staff. The end of the summer is capped with a workshop, in which WSU and CSM students are brought together to further their professional development. Workshop topics include courses on scientific writing and presentation, but also time and people management. Based on their acquired skills, students often present their work at scientific conferences, allowing for developing their presentation skills and

develop new acquaintances in the field of radiochemistry. Finally, scientists with relevant research and professional expertise are invited to come to WSU to present their research and communicate with the trainees.

Through these visits, the students develop new connections, learn about a variety of research topics involving radiochemistry, and obtain firsthand inputs on post-graduate work.

The traineeship grant covers the expenses associated with stipends, tuitions and fees (including health insurance); students travel to a national laboratory partner, workshops, and conferences; materials and supplies for laboratory work.

The trainees are in constant communication with their WSU advisor and have regular interactions with the national laboratory staff of choice. Additionally, the selection and review committee conduct a yearly formal review of the student progress in academic courses, research, and interaction with a national laboratory partner.

At the end of the 2-year cycle, the student may defend a Master in Science. The thesis Master will be based on the research performed during the 2-year cycle. Students pursuing a PhD work for another 1 to 3 years. The national laboratory staff remain involved in the student's research regardless of the funding origin and will remain members of the student's PhD committee.

Ten students have participated in the program at WSU since 2016 and partnered with Pacific Northwest National Laboratory, Idaho National Laboratory, and Lawrence Livermore National Laboratory.

We are looking forward to a new crew!



Kirsten Adams
works on the analysis
of I-129 in Hanford
Tank Wastes, in part-
nership with PNNL
2016-2018



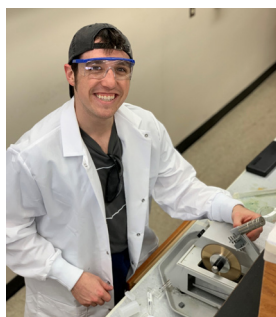
Derek Deming
works on the chemistry
of metal organic
framework
2018-2020



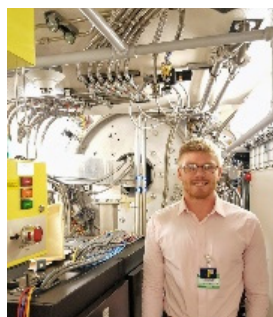
Brandon Johnson
is specializing
in calorimetry
measurements
2018-2020



Creighton King
develops his work
around the separation
of technitium, in
partnership with INL
2017-2019



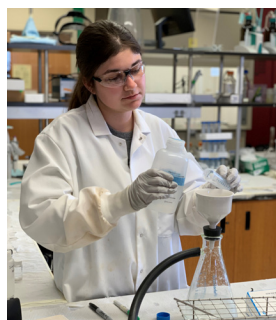
Matthew King
currently works on the
chemistry of rhenium
compounds and on
the nuclear reactor
component behaviors
under extreme
environments
2018-2020



A.J. Krzysko
studies the chemistry
of Al solids at Hanford
tank, in partnership
with PNNL
2016-2018



Robert Lusk
will study nuclear
forensics, in
partnership with INL
2017-2019



Emily Maulden
works on the
geochemistry of
aluminum minerals
and Pu at Hanford, in
partnership with LLNL
2018-2020



Ian Neil
successfully defended
his Masters in May
2019. He worked with
LLNL
2017-2019



Ashley Rojas
works on the
bioadsorption of rare
earth elements, in
partnership with LLNL
2017-2019



Gretchen Tibbits
works on the
electrochemistry of
fission products
2018-2020

TRAINEESHIP PARTICIPANTS

\$4,667,674.00

NEW FUNDED AWARDS

May 2018 through April 2019

CLIFF BERKMAN

\$380,912
HHS-NIH NCI
PSMA - Targeted Small-Molecule Drug Conjugates

JAMES BROZIK

\$139,237
DOD-AIR FORCE DURIP
Instrumentation for Single Molecule Fluorescence Lifetime Imaging in Living Systems

\$351,835

DOD-AIR FORCE AFOSR
Universal Quantum Yield Standards for Stochastic Biophysics

BRIAN CLOWERS

\$259,630
DOD-ARMY DURIP
Advanced Instrumentation for the Characterizing Air-Water Interfaces: Field Induced Droplet Ionization and Linear Ion Trap Mass Spectrometry

KW HIPPS

\$420,000
NSF CHE
Determination of Activation Barriers for the Adsorption and Desorption of Self-Assembling Organic Molecules onto Gold and Graphite from Organic Solvents

JEFFREY JONES

\$93,302
UNIV KS UNIV KS MED CENT HHS-NIH
The Role of CYP3A7 in the Disposition and Toxicity of HIV Inhibitors in the Developing Infant

CHULHEE KANG

\$488,947
NSF CHE
Chemical and Biochemical Bases for EDTA Biodegradation

\$414,000.00

MURDOCK
PMU: Establishment of a Small-Molecule Crystallography Service and Teaching Center at WSU

DAVID LEE

\$700,000
KECK FDN
PMU: Seeing the Roaming Radicals

MING XIAN

\$407,908
HHS-NIH NIDA
Understanding Opioid Dependence and Hydrogen Sulfide

COLLABORATIONS

SUE CLARK/ ANTHONY KRZYSKO

\$1,200.00
BATTELLE - PNNL DGRP Travel DOE-EERE
Krzysko PNNL Travel

JEFF JONES/ DMITRI DAVYDOV

\$401,626.00
HHS-NIH NIAAA
Non-Canonical Role of Ethanol-Inducible Cytochrome p450 Species in Alcohol-Drug Interactions and Alcohol-Related Disorders

URSULA MAZUR/ KW HIPPS/ BHASKAR CHILUKURI

\$609,077.00
NSF CHE
Cooperative Dynamics in Ligand Binding Reactions at the Solution/Solid Interface

On September 8, 2018, prior to the WSU vs. San Jose State home football game, chemistry faculty Jim Brozik, KW Hipps and David Lee were recognized for receiving research grants from the Keck Foundation. Drs. Brozik and Hipps received a \$1,000,000 grant in 2017 and in 2018, Dr. Lee received \$700,000. In the past, WSU researchers have only received one such grant every eight years, on average.

Photo (from left to right in between WSU Cheerleaders): WSU President Kirk Schulz, Vice President of Research Chris Keane, KW Hipps, Jim Brozik and David Lee.



STAFF

Meet Cole Mercer 4th Floor Stockroom

My name is Steven Cole Mercer, but I just go by Cole. I graduated from Northern Arizona University (NAU) with a BS in Biochemistry in 2014. I was the general and organic chemistry lab instructor and TA manager at NAU for a couple of years before I joined a small nanoparticle company called nanoComposix Inc. in San Diego, CA. At nanoComposix, I performed R&D and scaled-up manufacturing of lateral flow diagnostic assays at the cutting edge of current diagnostic capabilities using ultra-sensitive nanoparticles that we developed in-house. My fiancée, Lindsay, is pursuing her PhD in Infectious Disease & Immunology here at WSU, so I joined the Chemistry Department to be closer to her. My responsibilities here include the maintenance of the instructional lab stockrooms (mainly the 4th floor organic stockroom), oversight of stockroom workers and assisting with lab development. I hope to use my industry experience to help provide a more directed and applicable education to current industry jobs, as well as enjoyable lab experience, to our current and future students. The world of technology and science is fast-moving and I believe that we need to accommodate such change with passion and vigor!

I believe in a balance of the body and mind, so my free-time is spent heavily in the gym weightlifting and training for CrossFit Competitions. I have also been doing martial arts for over 15 years and have participated in multiple boxing/MMA competitions. I also like to play the guitar, go backpacking, and play with my dog – sometimes all at once! Thanks for taking the time to get to know me. I would love to get to know you too, so feel free to stop by my office on the 4th floor of Fulmer, room 435A.



Early Career Achievement Administrative Professional

Stacie Olsen

Academic Coordinator/Advisor
Chemistry

Stepping into the role of graduate coordinator for one of WSU's largest Ph.D. programs just before a visitation weekend, Stacie Olsen had to hit the ground running. In the four years following that successful event, she has continued to streamline department operations and improve efficiency.

Stacie transitioned the admission review committee from hard copy applications to a collaborative electronic system, saving time and enhancing the selection process. Stacie also created a checklist for new graduate students, revamped and updated the student handbook, and reduced visitation costs without sacrificing quality.

She excels at deploying technology to make complex tasks easier. For example, she designed a database to track current and former students' milestones, created surveys to gather assessment data, and built an online student employment form—all using new tools she learned on the job.

A member of the WSU Graduate Education Coordinators Organization Group, she has great rapport with colleagues and students all across the University.

Stacie's organizational skills, technical ability, and positive outlook play a leading role in the success of the department.



**Stacie's
organizational skills,
technical ability,
and positive outlook
play a leading role
in the success of the
department**

Academic Coordinator/ Advisor, Stacie Olsen, was recognized for Early Career Achievement at the College of Arts and Sciences Annual Awards and Recognition Social held this past April.
Poster design by CAS

STUDENTS

ACHIEVEMENTS AWARDS SCHOLARSHIPS

Samuel Battey (Peterson)

Glenn & Jane Crosby Graduate Student Scholars
Endowment

DOE SCGSR Graduate Fellowship

Anthony Burt (Mancini)

Stacy Gardner Research Endowment Fund

Dan Collins (Garner)

Stacy Gardner Research Endowment Fund

Kip Daly (Gupta)

Professor Glenn A. Crosby Outstanding Graduate
Seminar Award - Honorable Mention

Jacob Day (Xian)

James P. & Lee Ella Ruck Graduate Fellowship

Cecilia Eiroa Lledo (Wall)

James C. Sullivan Memorial Fellowship in Chemistry

Tanner Hanson (Heiden)

Neva Martin Abelson Graduate Fellowship

Megan Hawkins (Wu)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Adam Huntley (Reilly)

Glenn & Jane Crosby Graduate Student Scholars
Endowment

Jann and Herb Hill Travel Scholarship

Kristen Johnson (Hippis)

James P. & Lee Ella Ruck Graduate Fellowship

Nitesh Kumar (A. Clark)

Professor Harold W. Dodgen Outstanding Graduate
Seminar Award - Honorable Mention

Pearl Kwantwi-Barima (Clowers)

Donald S. Matteson Graduate Fellowship in Chemistry

Ernesto Martinez Baez (A. Clark)

Donald S. Matteson Graduate Fellowship in Chemistry

Bethany Lawler

College of Arts and Sciences - Outstanding Senior

Michael Martinez (Brozik)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Kelsey Morrison (Clowers)

E.L. Wagner Graduate Endowment

Cameron Naylor (Clowers)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Truong-Son Ngoc Nguyen (Peterson)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Paul Olatunji (Berkman)

Stacy Gardner Research Endowment Fund

Bojana Opacic (Reilly)

J. Ivan Legg Fellowship in Chemistry

Michael Pun (Berkman)

Stacy Gardner Research Endowment Fund

Miles Radford (Xian)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Uendra Rathnayake (Garner)

Stacy Gardner Research Endowment Fund

John Rodgers (Jones)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Austin Ryan (Mancini)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Will Smith (A. Clark)

Professor Harold W. Dodgen Outstanding Graduate
Seminar Award

Brittany Thiessen (Yoo)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Professor Glenn A. Crosby Outstanding Graduate
Seminar Award

Brena Thompson (Heiden)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

Jacob Wimpenny (Heiden)

Frank A. Fowler Endowed Graduate Fellowship in
Chemistry

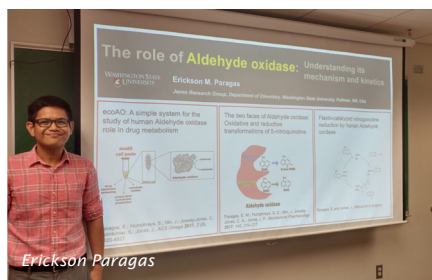
Shi "Steve" Xu (Xian)

Stacy Gardner Research Endowment Fund

GRADUATES



Dawanna White



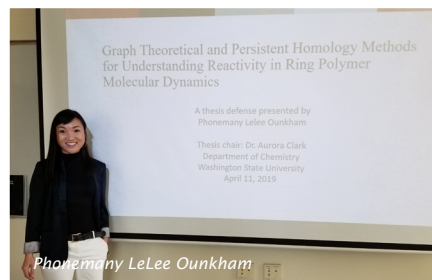
Erickson Paragas



Kirk Peterson, Brittany Thiessen and Jim Brozik



Kirk Peterson, Will Smith and Jim Brozik



Phonemany LeLee Ounkham



Khoi Hoang received his Bachelor of Science Degree on May 4, 2019
Photo by Qiang Zhang

BA GRADUATES

Isaac Bonar
Ricky Chang
Megan Dimmler
Jelani Lawson
Stephen Lindahl
Ciara Nawrocki
Alexander Palander
Theodore Sandberg
Daryl Settlemire

BS GRADUATES

Tyler Bickert
Jayson DeMers
Khoi Hoang
Bethany Lawler
Stephen Mather
Frankie Roberts
Nikolas Tsakeredes

MS GRADUATES

Joshua Breault (Zhang)
Joe Hantho (Xian)
Jacob Markut (Reilly)
Ashley Moon (Reilly)
Ian Neil (Wall)
David Otto (Zhang)
LeLee Ounkham (A. Clark)
Andrew Pemberton (Clowers)
Miles Radford (Xian)
Soheila Shahbazi (Xian)
Jacob Wimpenny (Heiden)

PHD GRADUATES

Brian Backer (Berkman)
Samuel Battey (Peterson)
Austen Davis (Clowers)
Jacob Day (Xian)
Cecilia Eiroa Lledo (Wall)
Rulin Feng (Peterson)
Mitchell Friend (Wall)
Thibaut Lecrivain (Nash)
Bojana Opacic (Clowers)
Erickson Paragas (Jones)
Dawanna White (Berkman)
Zhihao "Joe" Yu (Clowers)

MATTESON SYMPOSIUM 2018

Close to 100 attendees gathered in the SPARK building on WSU's Pullman campus to attend the Matteson Symposium on September 22, 2018.

The symposium's theme was *The Role of Medicinal Chemistry in Drug Discovery* and featured speakers from around the globe. This year's event was organized by Dr. Phil Cox, Senior Principal Research Scientist at AbbVie. Dr. Cox is also an adjunct professor in chemistry at WSU Pullman.

Attendees were treated to six lectures and lunch. The day ended with closing remarks from the symposium's namesake, Emeritus Professor Donald Matteson. A dinner social followed at the Elson S. Floyd Cultural Center.



All photos by Carolyn Joswig-Jones

The Matteson Symposium's inaugural event was in 2008. The idea to start the lecture series was conceived by the Organic Division to honor Professor Matteson's lifetime contributions to synthetic, organic and organoboron chemistry. Since 2008, there have been five symposia and two short courses.

The next Matteson Symposium is slated to be held in the fall of 2020.



Donald and Marianna Matteson with Carolyn Joswig-Jones

DEPARTMENT SEMINARS

The 2018-2019 department seminar schedule was filled with compelling speakers from around the country. Our department seminars take place on Monday afternoons during the academic year and are open to everyone.

- 8.20.2018 **Andrew Kummel, Professor of Chemistry/ Biochemistry, University of California – San Diego**
Subnanometer Engineering of Interfaces in Low Power Electronics
- 8.27.2018 **Jing Li, Distinguished Professor of Chemistry, Rutgers University**
Designing High-Performance Crystalline Hybrid Phosphors For Energy-Efficient Lighting Technologies
- 9.10.2018 **Ben Bythell, Professor of Chemistry/ Biochemistry, University of Missouri – St. Louis**
Chemistry of Useful Destruction
- 9.17.2018 **Aaron Esser-Kahn, Associate Professor of Molecular Engineering, University of Chicago**
Applying Chemical Biology Concepts to Innate Immunity and Vaccination – Probing a Code without a Key
- 9.24.2018 **Dr. Stosh Kozimor, Los Alamos National Lab**
Coordination Chemistry of +3 Actinides
- 10.1.2018 **Yi Liao, Professor of Biomedical and Chemical Engineering and Sciences, Florida Institute of Technology**
Light Controlled Proton Chemistry
- 10.8.2019 **Dr. Praveen Thallapally, Materials Scientist, Pacific Northwest National Lab**
Metal Organic Frameworks for Volatile Radionuclide Separation
- 10.15.2018 **Dr. Chun-Ling Chen, Materials Scientist, Pacific Northwest National Lab**
Designing Sequence-Defined Peptoids for Bio-inspired Synthesis of Functional Nanomaterials
- 10.22.2018 **Elliott Hulley, Assistant Professor of Inorganic and Organometallic Chemistry, University of Wyoming**
Application of FLP Design Strategies to Organometallic Transformations: Examining How Arenes Turn into Acids
- 10.29.2018 **Michael Heinekey, Professor of Chemistry, University of Washington**
Coordination Chemistry of Dihydrogen
- 11.5.2018 **Paula Diaconescu, Professor of Chemistry, University of California – Los Angeles**
Redox Switchable Catalysis
- 11.26.2018 **William Schneider, Professor of Computational Catalysis and Environmental Chemistry, University of Notre Dame**
The Catalytic Science of Making Up and Breaking Up Dinitrogen
- 12.3.2018 **Donna Chen, Professor of Chemical Engineering, University of South Carolina**
Designing New Heterogeneous Catalysts Through Metal-Metal Interactions
- 1.14.2019 **Peter Allen, Assistant Professor of Chemistry, University of Idaho**
DNA Circuits for Biomarker Detection and Diagnostics
- 1.28.2019 **Brian Woodfield, Professor of Chemistry, Brigham Young University**
The Unusual Path from Low Temperature Specific Heat to Fisher Tropsch Catalysts and Converting Waste into Liquid Fuels
- 2.4.2019 **Qiang “Jack” Zhang, Assistant Professor of Chemistry, Washington State University – Pullman**
Advanced Functional Porous Materials in Catalysis
- 2.11.2019 **Li “Emily” Liu, Associate Professor of Mechanical Aerospace and Nuclear Engineering, Rensselaer Polytech University**
The Integration of Scattering Experiments and Simulations in Energy and Medical Applications
- 2.25.2019 **Dr. Aaron Appel, Associate Division Director, Catalysis Science Group, Pacific Northwest National Lab**
Using Free Energies for H⁺ and H⁻ Transfers to Design Catalysts for the Reduction of CO₂
- 3.4.2019 **Travis Denton, Assistant Professor of Pharmaceutical Sciences, Washington State University – Spokane**
Bioorganic Chemistry at WSU Spokane
- 3.18.2019 **Rodney C. Ewing, Senior Fellow at the Freeman Spogli Institute for International Studies/Frank Stanton Professor in Nuclear Security/ Professor of Geological Sciences, Stanford University**
Projecting Risk into the Future: Failure of a Geologic Repository and the Sinking of the Titanic
- 3.25.2019 **Heather Kulick, Assistant Professor of Chemical Engineering, MIT**
Designing in the Face of Uncertainty: Exploiting Electronic Structure and Machine Learning Models for Discovery in Transition Metal Chemistry
- 4.15.2019 **Charles Campbell, Professor and B. Seymour Rabinovitch Endowed Chair in Chemistry, University of Washington**
Reaction Energies on Surfaces of Catalysts and Electrocatalysts
- 4.22.2019 **Martin Lawrence, Professor of Biochemistry, Structural Biology, Virology, CRISPER/Cas, Montana State University**
Easy Peasy, Lemon Squeazy; a New Structural Paradigm for Viral Assembly and Genome Delivery
- 4.29.2019 **Xiaosong Li, Harry and Catherine Jayne Boand Endowed Professor of Chemistry, University of Washington**
Manifestation of Spin-Couplings in Computational Molecular Spectroscopies

CHEMISTRY CLUB



by Secily Thompson, Chemistry Club President

The Chemistry Club has been busy this year with community service, outreach, and club projects. We have done a few demonstrations this year including shows for the Pullman Cub Scouts and Kids Science & Engineering Day. The Chem Club also put on shows for the students of WSU and their families during the semester and for Mom's and Dad's weekends to advertise the club and fundraise for future events. We have hosted an ester lab at the request of one of our members as a fun activity for club members to make some interesting scents and learn about ester chemistry. The different activities and outreaches we have done this year have given members a chance to learn how to teach and explore some rather interesting areas of chemistry outside the classroom. The Chemistry Club plans to continue with outreach and fundraising next year in hopes to expand membership.

A huge thank you to Nikki Clark, Dr. Finnegan, Molly Spain, and the Chemistry Department for all of the help they have provided!



VISITATION WEEKEND



by Stacie Olsen, Graduate Coordinator/ Advisor

Prospective graduate students for the 2019-2020 academic year converged on the WSU campus this past March. Our current graduate students hosted dinner and tours of campus and Pullman. Visitors also met with the professors that shared their common research interests.



One prospective student loved the beauty of Pullman and stated, "Everywhere I look is like looking at a scenery calendar." The weather was great for the weekend; however, we still had lots of snow when the visitors arrived. We are excited to see who accepts admission this fall and begins their next chapter with the Cougar Chemistry Family.

GRADUATE CHEMICAL SOCIETY

In addition to hosting meetings and awarding travel grants, we have hosted a few other large events for students and the department.

Last summer, we gathered at parks in Pullman to relax, play lawn games, and enjoy the fresh air. The most notable of these was when we spent the evening at Krugel Park on July 4th, where we socialized, ate, and relaxed.

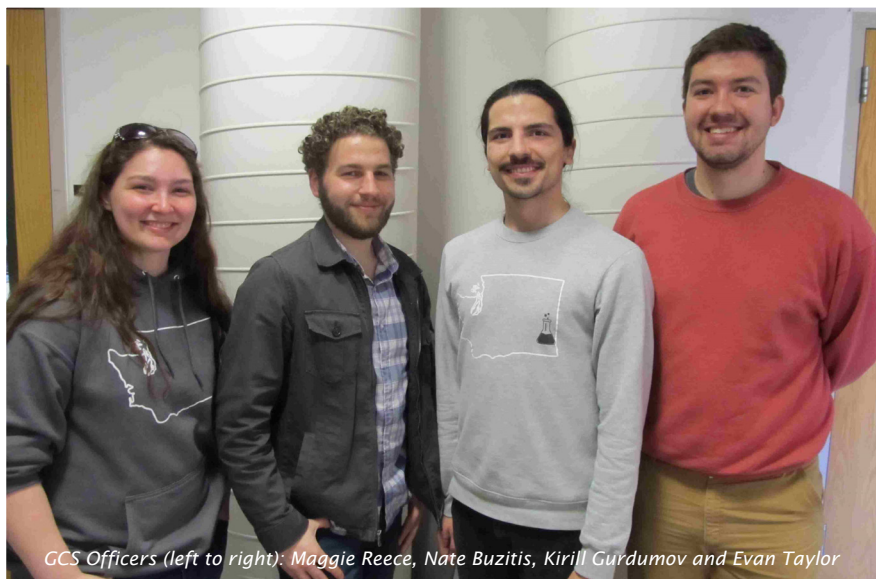
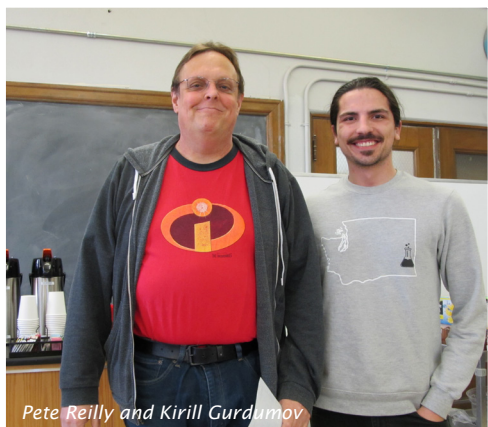
During the fall semester, besides our usual fundraiser, we also introduced a tie-dyeing event. This helped us fund the annual fall picnic at Klemgard Park for the department. We also hosted a movie night and bowling event for our graduate students.

Spring semester saw the prospective student visitation in March, and the awards banquet to acknowledge outstanding individuals in chemistry at WSU.

The officers for next year hope to build upon what was achieved in the 2018-2019 year, and continue to improve the academic and social life of the chemistry graduate students!

Your GCS Officers,

Kirill Gurdumov - President
Nate Buzitis - Vice President
Evan Taylor - Secretary
Maggie Reece - Treasurer



2019 GCS Awards Recipients

Undergrad Teaching Advisor of the Year
Paul Buckley

Graduate Teaching Faculty of the Year
KW Hipps and Jim Brozik

Teaching Assistant of the Year
Maggie Reece

Research Assistant of the Year
Kristen Johnson

Research Faculty of the Year
Pete Reilly

Department Staff of the Year
Molly Spain

Teaching Assistants of the the Year
Award given by the Clinical Faculty
Robbie Baker
Bojana Opacic

ALUMNI NEWS

Michael Baim, MS Chemistry '82, PhD Chemistry '84

Bioanalytical Systems Inc., a pharmaceutical development company providing contract research services and monitoring instruments, welcomed Michael as Vice President of Bioanalytical Operations.

Brandon NS Perkins, BS Organic Chemistry '02 (Jones)

Brandon recently received the EPA National Honor Award Gold Medal for Exceptional Service. The EPA's highest award is given on a highly selective basis for distinguished service of major significance to environmental improvement and public service. Brandon has worked for the EPA for 15 years since graduating from WSU.

Stephanie Holbrook Bruffey, (Sue Clark)

Stephanie is currently working as a radiochemical engineer at Oak Ridge National Laboratory. Here's what she has to report in her own words. "Life is good at ORNL, and it is hard to believe I have already been there over 9 years. (!) Currently, I spend my time on a wide variety of projects, which keeps me busy and engaged. I have developed a specialization in off-gas management by working with Bob Jubin and I also am a point person in my group for chemical enrichment technologies for several different elements. I fill in the remainder of my time with various other fuel-recycle projects. I'm funded by DOE-NE, NNSA, Office of Science, and a couple industry partners."

Joan Broderick, BS Chemistry '87

Dr. Joan Broderick was selected by the American Chemical Society for the 2019 Alfred Bader Award in Bioinorganic or Bioorganic Chemistry. The award honors a scientist for outstanding research accomplishments in biology and organic or inorganic chemistry. Her research is focused on radical SAM enzymes and biological metal cluster assembly in hydrogenases. Joan is currently a professor of chemistry and biochemistry at Montana State University.

Taken from Washington State Magazine, Spring 2019

Jack Steele, PostDoc '68 -'70

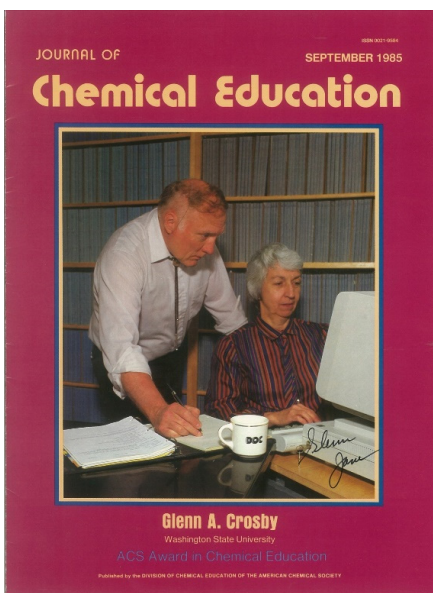
Dr. Steele received the Albert Nielsen Marquis Lifetime Achievement Award. An accomplished listee, his first professional role was as a teaching intern at Washington State University in Pullman, WA, from 1968 to 1970, where he also completed postdoctoral research under the direction of Dr. Ivan Legg. Dr. Steele celebrates many years of experience in his professional network, and has been noted for achievements, leadership qualities, and the credentials and successes he has accrued in his field.

WE'D LOVE TO HEAR FROM YOU!

It's always wonderful receiving news from our alumni. Please keep in touch with us and let us know how you're doing, what you're up to or to notify the WSU Chemistry Community of the passing of a colleague.

Send updates to: chemistry@wsu.edu

IN MEMORIAM



Professor Glenn “Doc” Crosby 1928 - 2019 Jane Lichtenfels Crosby 1928 - 2018

by Kerry Hipps

It is with great sorrow that we announce the passing of two important chemistry personalities. Glenn (Doc) Crosby served WSU for more than 30 years and retired in 2001. Glenn was the chemistry and chemical physics faculty member and Jane was his wife and office manager. She played a large role in everything he did, as was documented by their receiving the American Chemical Society Award in Chemical Education - the only time that award has been given jointly. Jane passed in 2018 and Glenn in 2019.

Glenn Crosby received his PhD from the University of Washington where he did pioneer work in the field of infrared absorption spectroscopy. He then traveled to Florida to work as a postdoctoral in the laboratory of Michael Kasha, where he studied the light emitted by excited state molecules. The beautiful colors of glowing molecules touched a special place in Glenn’s heart because he had lost one eye as a boy. From that day on, he dedicated himself to the study of light emission from transition metal and rare earth complexes.

After leaving Kasha’s lab, Glenn joined the faculty at the University of New Mexico where he quickly moved up the ranks from assistant to full professor. During that time, he had close association with Los Alamos Labs and trained several PhD students who made their career there. In 1966 he was recruited by WSU as a core

faculty member for the new interdisciplinary program in Chemical Physics - a program that thrived till the 1990’s when it evolved into what is now the Materials Science and Engineering program. As a joint chemistry/chemical physics faculty member Glenn trained more than 100 graduate students and conducted research that was internationally acclaimed. Among those 100+ graduate students, is the WSU faculty member writing this article.

Glenn was elected to Fellowship in the American Association for the Advancement of Science in 1964, quite an achievement for a 33-year-old. WSU honored him with a number of awards, including The Distinguished Faculty Address (1981), The Presidents Faculty Excellence Award (1984), and the American Chemical Society Award for Excellence and Innovation in Inorganic Electronic Spectroscopy (2007).

When Glenn turned 50, he turned his focus to the next generation of scientists. He became a consummate freshman chemistry instructor while still running a world-class laboratory. He then took what he learned about the undergraduate education process and became a national champion for undergraduate education innovation. One of Glenn and Jane’s many innovations was the Cougar Summer Science Camp that ran from 1983 through 1989 and brought in 5th grade students from across the state to spend 5 days immersed in science. He was recognized for these efforts by a long list of awards, a few of which include: The Manufacturing Chemists Association Award for Excellence in Chemistry Teaching (1979), The Council for the Advancement and Support of Education’s First National Professor of the Year Award (1981), Sahlin Faculty Excellence Award for Instruction (1983), Sahlin Faculty Excellence Award for Public Service (1989), The National Research Council Recognition of Outstanding Service (1996).

Glenn and Jane were special people who instilled the drive for excellence in their students – especially their graduate students. Their legacy is alive and well.

Dorothy B. Davidson, 92, BS Chemistry ‘47,
June 5, 2018 in Monroe, WI

Professor Karen Grant, 73, former Chemistry
Coordinator at WSU Tri-Cities, November 1, 2018

James D. Liedtke, 81, PhD Chemistry ‘64,
October 11, 2018 in Monmouth, OR

Mildred E. Starr, BS Chemistry ‘47,
October 17, 2017

James “Jim” Pearce Ruck, 89, BS Chemistry ‘54,
November 4, 2018 in Everett, WA

Theodore Judd Williams, 75, PhD Chemistry ‘68,
December 13, 2017 in Missoula, MT

John Coddington, 47, PhD Chemistry ‘93,
January 14, 2019 in Kennewick, WA

CHEMISTRY NOTATIONS

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Gen Chem Lab Supervisor, Ryan Rice writes formulas on the lightboard
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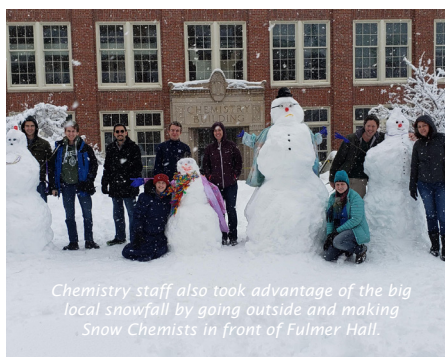
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One of the Chemistry Club members performs an experiment during Mom's Weekend in April. This demo is a popular stop for Cougar Moms.



The support staff held a dessert contest in February to bring some much needed excitement to the department during the long winter. Abi, Zach, Guy, Nathan, Kirill and Kirk all served as judges.



Chemistry staff also took advantage of the big local snowfall by going outside and making Snow Chemists in front of Fulmer Hall.



Nikki Clark and Michael Finnegan have fun experimenting with chemical reactions on pumpkins during classes on Halloween.