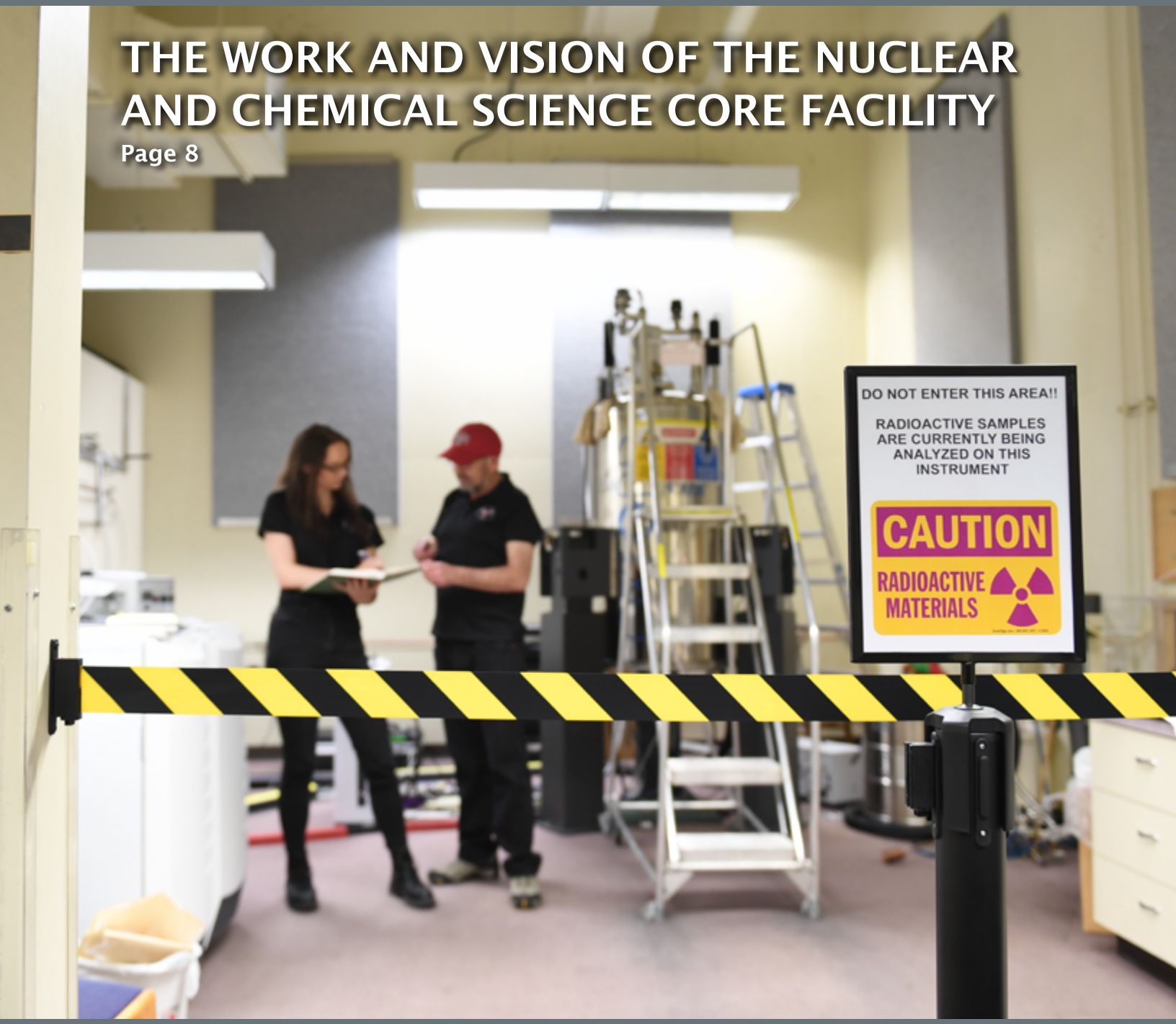
CHEMISTRY NOTATIONS

DEPARTMENT OF CHEMISTRY 2022 NEWSLETTER

THE WORK AND VISION OF THE NUCLEAR AND CHEMICAL SCIENCE CORE FACILITY

Page 8



WASHINGTON STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES

A MESSAGE **FROM THE CHAIR**

Greetings, Cougar Chemists!

In addition to what you'll find in the pages of this newsletter, some other brief updates here on the goings-on in Chemistry. Our two new assistant professors who started in the fall of 2020 – Liane Moreau and Jeff Bell – taught their first few courses and have research programs well under way (Moreau: the nanoscale properties of f-element materials, particularly at their surfaces and interfaces; Bell: integrating magnetism with electrochemistry to develop diagnostic tools for biomarkers of disease). I'm happy to report that they are both making excellent progress. We also have a new assistant professor joining the department this fall. Anjali Sharma comes to us from a postdoctoral fellowship in nanomedicine at Johns Hopkins University with a PhD from McGill University in Montreal. She will set up a new laboratory in Troy Hall focusing on chemical biology and the use of nanotechnology for target-specific drug/gene delivery. More details on Prof. Sharma will be forthcoming in the next newsletter. We will also begin searching this fall for an additional two new faculty members, so expect even more new and exciting science to be coming out of the department that will greatly impact both undergraduate and graduate student researchers in Chemistry.

In our last newsletter, much of the conversation was about the effects of the pandemic on the department. I'm happy to report that as of Fall 2021, we have been back to relatively normal operations, including face-to-face classroom teaching. Our Departmental Seminar program was back up and running (see pg. 10-11) and our faculty were traveling to re-opened scientific conferences and fulfilling invitations to speak at universities around the country.

In closing, I will note that this is my last newsletter as chair of the department; Prof. Cliff Berkman began serving as department chair in August. With a new budget model soon in effect for the University, the next few years hold potential for strong growth in the department and I'm confident Prof. Berkman will help chart a successful course for Chemistry. The six years of my tenure as chair have been incredibly challenging but also personally fulfilling in many ways. I have to admit it will be strange to go back to "just" teaching and carrying out research!

Go (Chem) Cougs!

Kirk Peterson
Professor and Department Chair
Fellow of the ACS, APS, and AAAS

P.S. To learn about making a gift to support chemistry education and research, please visit 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
Pete Reilly - Associate Chair of Graduate Studies & Associate Professor
Greg Crouch - Associate Chair for Undergraduate Studies & Professor, Career Track

TENURED/TENURE-TRACK FACULTY

Jeffrey Bell - Assistant Professor - Analytical
Cliff Berkman - Professor - Biological Systems, Organic
James Boncella - Professor - Inorganic, Radiochemistry
James Brozik - Professor - Analytical, Biological Systems, Materials, Physical
Aurora Clark - Professor - Computational, Physical, Radiochemistry
Brian Clowers - Associate Professor - Analytical
Xiaofeng Guo - Assistant Professor - Physical, Radiochemistry, Materials
KW Hipps - Regents Professor - Materials, Physical
Jeff Jones - Professor, Biological Systems, Organic
ChulHee Kang - Professor - Biological Systems, Organic, Physical
Alex Li - Professor - Analytical, Biological Systems, Organic
Ursula Mazur - Professor - Materials, Physical
Liane Moreau - Assistant Professor - Materials, Radiochemistry
Kirk Peterson - Professor - Computational, Physical
Pete Reilly - Associate Professor - Analytical
Choong-Shik Yoo - Professor - Materials, Physical
Qiang Zhang - Assistant Professor - Inorganic, Materials

CAREER-TRACK FACULTY

Paul T. Buckley - Director of General Chemistry & Associate Professor
Greg Crouch - Associate Chair for Undergraduate Studies & Professor
Nelmi Devarie Baez (WSU Tri-Cities) - Assistant Professor
Michael Finnegan - Assistant Professor
Zachariah Heiden - Associate Professor
Jeremy Lessmann - Associate Professor
Krista Nishida - Assistant Professor
Adenike Otoikhian (WSU Vancouver) - Assistant Professor
Louis Scudiero – Professor
Elsa Silva Lopez (WSU Tri-Cities) - Assistant Professor
**To see our current affiliate and emeritus faculty, visit our website at chem.wsu.edu*

INSTRUCTIONAL STAFF

Nikki Clark - Undergraduate Academic Coordinator
Ryan Rice - General Chemistry Laboratory Supervisor

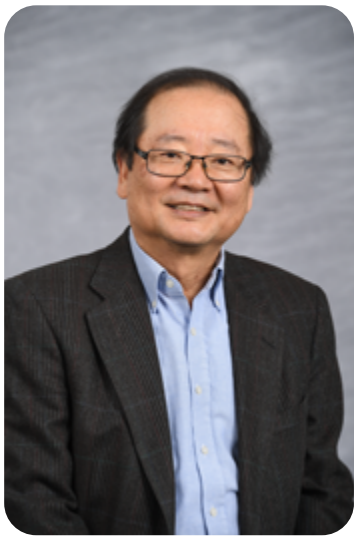
SUPPORT STAFF

Trent Amonett - Coordinator
Jett Bingman - Program Coordinator
Lauren Hatley - Finance/Budget Manager
Yoshi Kodama - IT Manager
Sarah Oesch Miller - Graduate Program Coordinator
Linda Sue Kildew- Fiscal Specialist
Jennica Stiff - Fiscal Technician

STOCKROOM STAFF

Yuwei Kan - Stockroom Manager
Duncan Lester - Classroom Support Technician
Kyle Reece - Classroom Support Technician

FACULTY



2022 College of Arts & Sciences Faculty Awards

Outstanding Career Achievement

Choong-Shik Yoo

Chemistry; Institute for Shock Physics

Early Career Achievement, Tenure Track

Xiaofeng Guo

Chemistry

Meet Choong-Shik Yoo

An internationally renowned figure in static high pressure science, Choong-Shik Yoo developed and sustains a world-class academic research and education program at WSU. Choong-Shik epitomizes faculty excellence as both an innovative researcher and a superb educator.

Yoo's groundbreaking research achievements build on especially challenging and elegant optical and X-ray measurements to understand states of matter at extreme thermodynamic conditions. His work has brought considerable extramural funding to the University from diverse sources.

Through his mentorship and hands-on training, numerous graduate students and postdoctoral fellows have achieved the knowledge and skills needed to obtain prominent posts in academia, national laboratories, and industry.

Before joining WSU faculty in 2007, Yoo led the High Pressure Physics Group at the prestigious Lawrence Livermore National Laboratory, and throughout his more than 35-year career, he has made profound contributions across the physical sciences. Widely sought for both the breadth and depth of his expertise, Yoo publishes frequently in top scientific journals and lectures worldwide on an array of topics. His numerous scientific accomplishments and broad scholarly scope speak to his boundless curiosity and dedication to expanding knowledge for today and the future.

Feature written by CAS Communications

Meet Xiaofeng Guo

An emerging expert in nuclear thermodynamics, Xiaofeng Guo is an outstanding educator, scholar, and colleague.

In the classroom, Guo is equally at home leading large, first-year undergraduate courses as he is engaging with graduate students in small specialty seminars. He is also a dedicated mentor currently supervising eight doctoral and two undergraduate students.

In the lab, Guo is a superb research chemist with a keen understanding of materials critically important to the nuclear fuel cycle and the safe long-term storage of nuclear waste. His unique thermodynamic techniques are applicable to many fields: Guo regularly contributes to answering complex, interdisciplinary questions in chemical engineering, natural geologic systems, and other scientific realms.

Since joining WSU in 2018, Guo has published 76 peer-reviewed articles, co-founded the WSU Navrotsky Institute for Experimental Thermodynamics, received more than $1M in external funding, and led the acquisition of a state-of-the-art X-ray spectrometer that greatly expanded the University's research capabilities and opportunities for multiple disciplines to work together. Guo is a rising star, well on his way to becoming an internationally renowned researcher, collaborator, and professor.

Feature written by CAS Communications

FACULTY

Scholarly Associate Professor Jeremy Lessmann, PhD, was named the director of the Office of Undergraduate Research in January 2022.

Professor Lessmann has been teaching in the Department since Fall semester 2001 but this January he took on a new half-time role at the University as the Director of the Office of Undergraduate Research (OUR), part of the Division of Academic Success and Student Engagement (DAESA) under Interim Vice Provost for Academic Success and Student Achievement William B. Davis and Assistant Vice Provost Mary Sanchez-Lanier. The Office of Undergraduate Research exists to promote, support, and celebrate mentored Undergraduate Research, Scholarship, and Creative Activity throughout the WSU system. The best-known event OUR puts on is SURCA, the annual Showcase for Undergraduate Research and Creative Activity. In addition, OUR gives out Undergraduate Research Fellowships to current students engaging in undergraduate research and scholarship, runs the UNIV 199 course Introduction to Directed Research, and has a team or research Peer Mentors both of which are available to help undergraduates develop the tools to seek out mentored research opportunities in their own programs. Prof. Lessmann says, "After more than 20 years as teaching faculty and advising our Chemistry majors I had an opportunity to expand my role at the University and direct several projects that I have been involved with for years. I want to expand access to research opportunities for WSU students in all majors because I know how beneficial it was to my growth as a Chemist and I know it will be just a valuable for them. I also look forward to continuing engaging our majors in the classroom and lab and in advising sessions."

FACULTY PROMOTIONS

Paul Buckley:
Professor, CT

Adenike Otoikhian:
Associate Professor, CT

Nelmi Devarie Baez:
Scholarly Associate Professor, CT

FACULTY

Phil Garner Retirement

We bid farewell to Professor Phil Garner this year as he begins his retirement from the Department of Chemistry after 15 years of service. He joined the faculty in 2007 after moving west from his previous faculty post at Case Western University. Since then, Garner's passion for scientific rigor and relentless pursuit of challenging problems in organic chemistry has helped shape the characters of the many students who worked in his lab and resulted in a substantial body of scientific work recognized on an international level.

Garner was born and raised in Greensburg, Pennsylvania, where he developed an early interest in nature and science. He earned both his BS in chemistry (1977) and PhD in organic chemistry (1981) at the University of Pittsburgh under the guidance of Prof. Paul Dowd. Garner did his postdoctoral work in Prof. Paul Grieco's laboratory at Indiana University. In 1983, he took up his first faculty position at the Illinois Institute of Technology in Chicago and initiated a research program concerned with the stereo-controlled synthesis of complex nucleoside antibiotics.

"Phil Garner introduced me to the messy and exciting real world of research," said Prof. Vince Rotello, previously an undergraduate in Garner's lab at IIT. "Phil was a demanding taskmaster and a fiery personality, making for an exciting ride. And the ride was a very productive one. Besides getting my first publication, I had the skill and knowledge to walk into my graduate life at Yale and hit the ground running."

It was also at IIT where Garner first reported the synthesis of a widely used chiral building block derived from Serine that has since become known as Garner's Aldehyde.

He moved to Case Western Reserve University in 1985 where he established a broad research program that included the synthesis of natural products, the development of new methodology for organic synthesis, and the invention of novel drug platforms. After moving to the WSU Chemistry department, Garner continued this work, leading his students in the development of new methods in asymmetric synthesis, the total synthesis of complex natural products, and peptide chemistry. Recent work in his lab has established the concept of expressed protein glycoligation, bridging the gap between chemical glycosylation and the recombinant expression of proteins. In 2016, Phil Cox, a Garner group alum and senior principal research scientist at AbbVie, began a collaboration between AbbVie and the Garner lab. "It was fantastic to rekindle our relationship after so many years and it was great to see Phil in action again with his last group of three grad students, Dan, Nick, and Upendra. It was awesome to see the development of these guys from the beginning, where they were getting used to the Garner Method, to the end, as confident, excellently trained scientists." In his retirement, Garner says he plans to spend as much time as possible exploring nature. "I love nature," he writes, "after all, that is what drew me to science!" In addition to his love of chess, gardening, cooking and reading, he has also rediscovered his interest in painting and woodworking. With all of that and his plan to "tie up loose ends on some research projects and writing a book on organic synthesis," it sounds like his will certainly be an active retirement.

"What will I miss? Interacting with students and the opportunity to impact their lives in a positive way. It is very satisfying to see how successful my students are once they leave the nest." -Phil Garner

Farewell to Rock Mancini

We wish all the best to Prof. Rock Mancini as he leaves to set up a new laboratory as an assistant professor at the University of Miami-Ohio.

Farewell to Aurora Clark

We also must say our good-byes, and certainly also our strong best wishes, to Prof. Aurora Clark as she leaves WSU Chemistry for new adventures at the University of Utah as a professor in their department of chemistry. Clark's numerous contributions to the department and WSU will be greatly missed.

$4,033,861

Newly Funded Awards and Renewals

May 2021 through July 2022

CLIFFORD BERKMAN

US Department of Health and Human Services - National Institute of Health | New Award
Near-IR Ratiometric Fluorescence Probes for Assessing Cargo Delivery to Prostate Tumors
$224,845

JAMES BROZIK

Department of Defense - Air Force | New Award
Stochastic Biophysical Interactions within Aquaporin-4 Assemblies
$210,000

AURORA CLARK

Department of Energy - Office of Nuclear Science | Renewal
Bespoke Liquid/Liquid Interfaces that Modulate Solute Transport Mechanisms in Solvent Extraction
$68,759

BRIAN CLOWERS

Texas A&M University - Health and Human Services - National Institute of Health | New Award
Next generation ion mobility mass spectrometry instrumentation to uncover hidden dynamics underlying protein function
$84,808

National Science Foundation | New Award
Collaborative Research: Tunable HDX and Ion-Molecule Interactions Using Doped-Gas Ion Mobility-Mass Spectrometry
$255,458

US Department of Health and Human Services - National Institute of Health | New Award
Tractable Tandem Ion Mobility Technology using Structures for Lossless Ion Manipulations and Photodissociation
$285,876

XIAOFENG GUO

Department of Energy - Office of Nuclear Energy | New Award
Laboratory-based High-Resolution X-ray Absorption and Emission Spectroscopy for Nuclear Science and Radiochemistry Research and Education
$287,450

PETER REILLY

Washington Research Foundation | New Award
Digital Waveform-Based Mass Spectometry
$50,000

AB SCIEX | New Award
Tandem Digital Mass Filter
$44,000

National Science Foundation | New Award
A New Digitally Driven Triple Quadrupole Mass Spectrometer
$526,214

CHOONG-SHIK YOO

National Science Foundation | Renewal
Dense Extended Hydrocarbon Framework Materials (3D Polymers)
$561,738

COLLABORATIONS

AURORA CLARK/SUE CLARK

Pacific Northwest National Laboratory - Battelle Department of Energy | Renewal
PMU: Energy Frontier Research Center: IDREAM – Interfacial Dynamics in Radiation Environments and Materials
$212,000

JAMES BROZIK/CHULHEE KANG

National Science Foundation | New Award
Understanding the P450 enzymes essential for monolignol biosynthesis
$772,713

JAMES BONCELLA/LIANE MOREAU

WSU Foundation Murdock | New Award
PMU: Acquiring an In-house Small Angle X-Ray Scattering (SAXS) System for WSU
$450,000

THE NUCLEAR AND CHEMICAL SCIENCE CORE FACILITY

Written by
Zachariah Heiden
Director, WSU Center for NMR Spectroscopy

To aid in the growth of instrumentation available for analysis of radioactive samples, effective July 1, 2022, the WSU Center for Nuclear Magnetic Resonance (NMR) Spectroscopy will merge with the Nuclear Science Center (NSC). The WSU Center for NMR Spectroscopy was founded in the mid-1990s as a central University facility, administered by the Office of Research, to provide access to state-of-the-art NMR instrumentation to users across the WSU campuses and outside institutions. The NSC (previously known as the Nuclear Radiation Center) has been on the WSU Pullman campus since 1961 and has provided facilities with nuclear-related educational and research programs for the entire campus.

The resulting instrument facility will be called the Nuclear and Chemical Science Core Facility, or the NUCS Core Facility for short. The NUCS Core Facility will consist of one facility housed in two locations (Dodgen Research Facility and Fulmer Hall). The mission of the newly formed NUCS Core Facility is to provide a collaborative environment where WSU faculty, staff, students, and clients can succeed in their basic and applied nuclear and chemical science research goals.

The merging of the NSC and the Center for NMR Spectroscopy was catalyzed by the the Office of Research push to consolidate instrumentation centers, making various instrumentation located at WSU more visible and accessible to researchers both on and off campus.

Current instrumentation at the NUCS Core Facility consists of a 1 MW nuclear reactor; an epithermal neutron beamline; two gamma-ray irradiators; alpha-spectrometers; gamma-spectrometers; a recently acquired X-ray adsorption instrument (installed in 2021 and purchased through a grant from the Department of Energy); a very recently acquired small angle scattering instrument (installed in June 2022, purchased through a grant from the M.J. Murdock Foundation); a powder and single crystal x-ray diffractometer; three NMR spectrometers; and a dynamic light scattering instrument. All of these instruments are capable of analyzing radioactive samples.

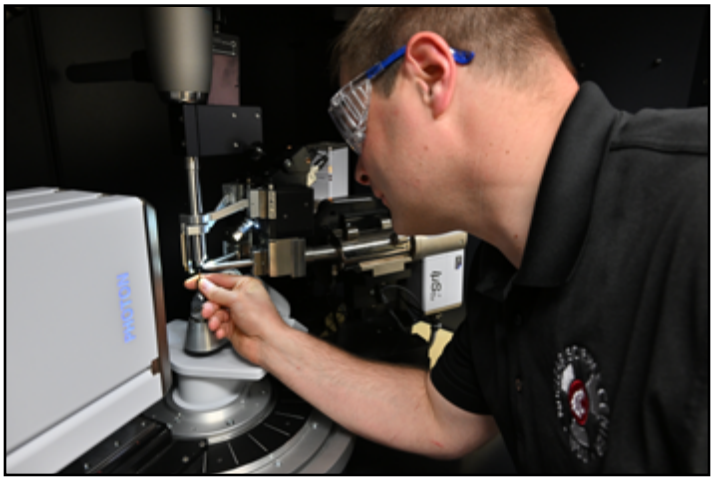
The ability for researchers to access a vast array of equipment capable of analysis of radioactive samples in the same facility as a nuclear reactor is a particularly unique capability. The NUCS Core Facility aims to act as a one-stop shop for all things nuclear and to allow researchers to have multiple pieces of instrumentation and characterization techniques readily available to study material properties that cannot be studied under normal conditions.

To learn more about the NUCS Core Facility or recent updates, please visit the facility website at **nsc.wsu.edu/NUCS**.

NUCLEAR SCIENCE CENTER
WSU
NUCS Core Facility

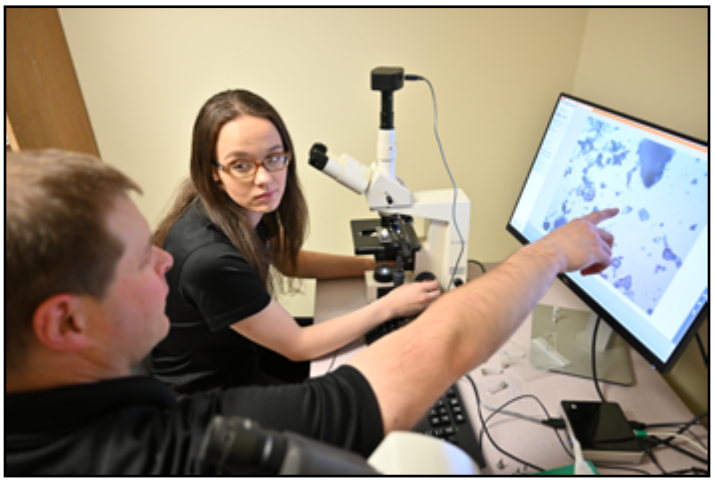
Above: Two of the gamma spectrometers located in NUCS-Dodgen.

Right: A goniometer base containing a radioactive single crystal for analysis in NUCS-Fulmer.



Photos by Bob Hubner, WSU Photo Services

Below: Zachariah Heiden, associate director of NUCS Core Facility, shows Victoria Delsasso, technical assistant, good and bad crystals to select for single crystal analysis on the Bruker D8 Venture single crystal X-ray diffractometer, located in NUCS-Fulmer.



Left: Bill Hiscox, assistant director of WSU Center for NMR Spectroscopy, shows Victoria Delsasso, technical assistant, how to submit NMR samples to the 500 MHz Bruker Avance Neo NMR spectrometer in NUCS-Fulmer.

Left: Zachariah Heiden places a crystal in the Bruker D8 single crystal X-ray diffractometer for analysis in NUCS-Fulmer.

Cover photo: The barrier used for analysis of radioactive samples of the Varian 600 DD2 NMR spectrometer. Bill Hiscox and Victoria Delsasso are in the background discussing the analysis of the NMR sample in NUCS-Fulmer.

DEPARTMENT SEMINARS

The 2021-2022 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.

SPRING 2021

2/1/2021 **Anatoly Frenke**l, Stony Brook University, "Decoding Reactive Structures in Nanocatalysts Hidden in their X-ray Absorption Spectra"

2/8/2021, **Laura Bartley,** Washington State University, "Altering cell wall phenolic acids to improve biomass for biorefining"

2/22/2021, **Xiaofeng Guo,** Washington State University, "Thermodynamics of f-block solid state materials"

3/1/2021, **Amanda Lines,** PNNL, "On-line monitoring and sensor development: building our tool kits to understand and advance nuclear fuel cycles"

3/8/2021, **Jonathan Owen,** Columbia University, "The Mechanisms Governing Size andSize Distributions in the Synthesis of Colloidal Quantum Dots"

3/15/2021, **Pete Reilly,** Washington State University, "Developing Digital Waveform Mass Spectrometry"

3/22/2021, **Kristina Kvashnina,** European Synchrotron Radiation Facility, "X-ray Spectroscopy for Actinide Science"

3/29/2021, **Greg Brabeck,** Excellims, "Nonlinear Acceleration in Ion Trap Mass Spectrometry"

4/12/2021, **Arden Perkins,** University of Oregon, "Sulfur oxidation at the center of bacterial pathogenesis"

FALL 2021

9/27/2021, **Choong-Shik Yoo**, Washington State University, "Chemistry under Extreme Conditions (XCHEM)"

10/11/2021, **Jerome Delhommelle,** University of North Dakota, "Assembly, Cooperativity, and Emergence: From the AI-Guided Formation of Materials to the Onset of Soft Matter Robotics"

10/25/2021, **Anna Krylov,** University of Southern California, "New and old challenges in spectroscopy modeling"

11/1/2021, **Joanie Hevel,** Utah State University, "Naturally occurring cancer-associated mutations disrupt oligomerization and activity of Protein Arginine Methyltransferase 1 (PRMT1)"

11/8/2021, **J. David Robertson,** University of Missouri, “From Out of the Blue: Radioisotopes for Targeted Radiotherapy at MURR”

11/15/2021, **Richard L. Brutchey,** University of Southern California, “Molecular Programming the Phase Determination of Colloidal Nanocrystals”

11/29/2021, **Su Ha,** Washington State University, “Caustic Aqueous Phase Electrochemical Reforming (CAPER) for Process Intensified Hydrogen Production”

12/6/2021, **Jennifer Heemstra,** Emory University, “A chemical biology toolbox for probing A-to-I RNA editing”

SPRING 2022

1/24/2022, **Luyi Sun,** University of Connecticut, “Multifunctional Biomimetic Nanocoatings”

1/31/2022, **Jorge L. Colon**, University of Puerto Rico, “Electrocatalysis and Drug Delivery Using Layered Zirconium Phosphate Nanomaterials”

2/7/2022, **Jeffrey G. Catalano,** Washington University in St. Louis, “Controls on Interfacial Water Structure near Oxide Mineral Surfaces: Implication for Environmental Reactivity”

2/28/2022, **Peter Burns,** University of Notre Dame, “Uranium Mineralogy, Nanomaterials, and Nuclear Waste Management”

3/7/2022, **Steven Tait,** Indiana University, “Metal-ligand complexation on flat surfaces and on powder supports for single-site heterogeneous catalysis”

3/14/2022, **Helmut Kirchhoff,** Washington State University, “From Molecules to Membranes: The Dynamic Architecture of Photosynthetic Membranes in Plants

3/25/2022, **Sergei Tretiak,** LANL, “Machine Learning for materials and chemical dynamics”

4/18/2022, **Christian Ruby,** University de Lorraine, “Structure and Reactivity of Iron Oxides: The Usefulness of Mössbauer Spectroscopy”

4/25/2022, **Shengqian Ma,** University of North Texas, “Porous Organic Polymer-based Nanotraps for Radionuclide Sequestration”

NEW STAFF

Meet Sarah Oesch Miller

Graduate Program Coordinator

Sarah moved to Pullman in fall 2020 to be with her spouse, a veterinary student at WSU. Sarah and her husband, Curtis, welcomed an adorable mini Aussie/border collie puppy in November 2020. Sarah loves to bake, cook, read, and walk. Sarah graduated from Goshen College in Goshen, Indiana, in spring 2020 with a bachelor of arts degree in English. She is happy to be part of the chemistry department and enjoys working with the graduate students.

Meet Duncan Lester

Instruction & Classroom Support Technician

Duncan is a recent graduate of the University of Idaho chemistry department. Here at WSU he supports the organic and general chemistry classes by providing reagents and materials as well as supervision in case of spills or other emergencies. Duncan enjoys hobbyist electronics and video games in his free time, and keeps his tuxedo cat, Beans, from stealing lunch meat and other treats.

Meet Yuwei Kan

Stockroom Manager

Yuwei Kan was born in Changchun, China. In 2008, she started graduate study in chemistry and biochemistry at the University of South Carolina. Her dissertation was about the synthesis of new ruthenium and osmium carbonyl cluster complexes with main group bridging ligands and the investigation of the usual structures and bonding. Upon graduation in 2013, she moved to Texas and started her postdoctoral research with Prof. Abraham Clearfield at Texas A&M University. In 2016, Yuwei moved to Pullman with her family. She worked as the chemistry lab coordinator at the University of Idaho for five years before taking the stockroom manager position at WSU. She's very excited about being part of the WSU Chemistry family and very enthusiastic about supporting the chemistry research program and instructional labs. She has two cats, one dog, and two kids. In her spare time, she loves hiking, camping, and playing the piano.

Meet Kyle Reece

Instruction & Classroom Support Technician

Kyle Reece moved here from Indiana, where he studied biology at Ball State University. His main duties in his new post are preparing and maintaining the 100-level labs. His hobbies include cooking, taking classes at Gladish Community Center, and being very bad at disc golf. Outside of work you will most likely find him being chased by his dog, Luna.

STAFF CONT.

2022 College of Arts and Sciences Staff Awards

Ryan Rice

Mid-Career Achievement

Farewell to Lori Peterson

Long-time Chemistry employee Lori (Bruce) Peterson left the department this year to become faculty affairs coordinator in the Carson College of Business dean's office, where she concentrates on all faculty matters and manages the college's academic accreditation process. While in Chemistry, Lori took on many tasks, which included submitting an average of 71 funding proposals per year for Chemistry faculty; compiling data for tenure and promotion, faculty annual reviews, and assessment; assisting the chair; and, most recently, assisting with the Chemistry PhD program. During her time on staff, she served as assistant to three successive chairs: Sue Clark, Kerry Hipps, and Kirk Peterson. She was dedicated to the success of faculty through her late-night efforts to meet funding deadlines, and the couch in her office was always open to anyone who needed a problem solved or just needed to talk. While Lori is now located across the courtyard behind Fulmer in Todd Hall, she says Chemistry will always be "home."

STUDENTS

ACHIEVEMENTS
AWARDS
SCHOLARSHIPS

Anika Auni (Zhang)
Frank A. Fowler Fellowship

Brooke Bonar (Peterson)
Neva Martin Abelson Fellowship
Summer internship at Flatiron Institute

Jessica Carder (Brozik)
Herb & Jannette Hill Travel Award
J. Ivan Legg Fellowship
GPSA Research Exposition, 1st Place

Sumeet Chakravorty (Reilly)
James P. & Lee Ella Ruck Graduate Fellowship

Aditi Dahiya
Presidents' Leadership Award, 3rd place

Jayson De Mers (Scudiero)
Frank A. Fowler Fellowship

Esther Dodson (Berkman)
Neva Martin Abelson Fellowship

Cole Fisher (Boncella)
James P. & Ella Ruck Graduate Fellowship

Dalton Glasco (Bell)
James. O Schenk Travel Award
E.L. Wagner Graduate Endowment

Ian Haltom (Boncella)
DOE Training Grant
James P. & Ella Ruck Graduate Fellowship

Ashley Hunt (Peterson)
James P. & Ella Ruck Graduate Fellowship

Hannah Johnson (Zhang)
Harold Dodgen Fellowship
Nuclear Energy University Program Fellowship

Hope Lackey (Guo)
Loch Anderson & Allyn Perkins ARCS Endowment
Harold Dodgen Fellowship

Jacob Lewis (Kang)
Gardner Stacy Research Fellowship

Jiahong Li (Zhang)
Julian Culbertson Fellowship

Fatima Obe (Reilly)
Frank A. Fowler Fellowship

Anunay Pulukuri (Mancini)
Frank A. Fowler Fellowship

Maggie Reece (Guo)
WSU 3 Minute Thesis contest, People's Choice Award
Seaborg Summer Fellowship

Austin Ryan (Mancini)
Frank. A Fowler Fellowship
AAI Career in Immunology Fellowship

Haley Schramm (Clowers)
Herb & Jannette Hill Travel Award

William Smith (Clark)
DOE SCGSR Award

Natalie Yaw (Moreau)
DOE University Nuclear Leadership Program Fellowship, ARCS Foundation Fellow

Bixia Zhang (Kang)
Gardner Stacy Research Fellowship

CONGRATULATIONS GRADUATES

BA GRADUATES

Donald Bender
Brianna Knode
Sean Olsen
Katie Olson
Elizabeth Wilson
Jessica Workman

BS GRADUATES

Jake Bailey
Brandon Bunch
Acacia Dasher
Andrew Deebach
Malik Donlic
Tatum Flanagan
Lucas Gueller
Jack Harbour
Devon La Pierre
Laura Martinez
Keegan Paras
Ryan Spadia

MS GRADUATES

Conner Bailey (Reilly)
Creighton King (Boncella)
Melody Klein (Boncella)
Ashley Knapp (Moreau)
Samuel Miller (Peterson)
Truong-Son Nguyen (Peterson)

PhD GRADUATES

Kirill Gurdumov (Hipps/Mazur)
Nicholas Holloran (Garner)
Matthew Hurlock (Zhang)
Kristen Johnson (Hipps/Mazur)
Shane Kelly (Xian)
Jessica Knight (Ming)
Robert Lusk (Wall)
Michael Martinez (Brozik)
Feyisola Olatunji (Berkman)
Daniel Pope (A. Clark)
Upendra Rathnayake (Garner)
Austin Ryan (Mancini)
Brena Thompson (Heiden)
Hsin-Hua Wu (Peters)

Left: Michael Martinez with advisor, Prof. James Brozik

Below: Matthew Hurlock

Above: Hsin-Hua (Joelle) Wu with advisor, Prof. John Peters

Right: Brena Thompson with advisor, Prof. Zach Heiden

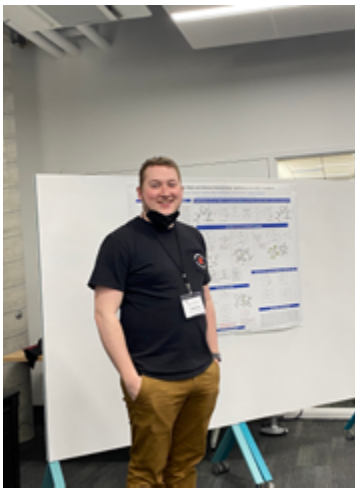
ACTIVITIES

Visitation Weekend Celebrations and more...

VISITATION WEEKEND

The Department of Chemistry hosted eleven visiting students from across the United States March 4-6, 2022. The Visitation Weekend is a recruitment opportunity for potential graduate students who have received an offer to join WSU's

Chemistry graduate program. It was a busy weekend, but, after missing out on an in-person visitation last year, it was a welcome opportunity to show off the people and facilities that make our program so great.



Students arrived in Pullman on Friday and started their visit with a tour of Pullman and the WSU campus. Next was dinner at Lumberyard in Pullman with current graduate students.

Saturday began with a Meet & Greet with visiting students, current students, and Department Chair Kirk Peterson. He welcomed the students and discussed the department, life in Pullman, and what to expect as a Chemistry graduate student. For the rest of the morning, each visiting student had five 20-minute meetings with various faculty members to discuss their research and ask any questions about their group. After the faculty meetings, current grad students hosted a Q&A for the visiting students. After lunch, most students went on a tour of the Nuclear Science Center with Prof. Liane Moreau. Some students also toured the NMR Spectroscopy Center, led by student Cole Fisher, as well as informal tours of research labs.

In the evening, Chemistry faculty and visiting students enjoyed a dinner and research poster session. Dinner was provided by Nikki Clark, Chemistry's undergraduate academic coordinator. After the poster session, visiting students were treated to a night on the town in Pullman, courtesy of GCS.

While 11 students visited during our visitation weekend, six other prospective students visited individually in the month following the visitation weekend. We know that visiting a graduate program in person can greatly help the decision-making process. Of the 17 visiting students, 6 chose to join our Chemistry department, with an overall new class of 16.

Written by: Sarah Oesch Miller

GRADUATE CHEMISTRY SOCIETY

This past year the Graduate Chemistry Society (GCS) officers worked to provide events and resources to help our chemistry graduate students excel during their time at WSU, as well as after. This began early in the fall with a welcomed return to in-person events during new student orientation in the form of our annual ice cream social. This marked the first time that members of GCS had been able to fully gather in over a year. Throughout the rest of the semester and year, a return to in-person events continued with the return of our monthly meetings and annual holiday party. In addition to these social events, we were lucky enough to have guest speaker Dr. Jen Heemstra from Emory University come to speak about battling imposter syndrome and how to deal with the mental stress of graduate school.

The spring semester brought on more social events and the first in-person visitation in two years. Over the official visitation weekend and the subsequent weeks, the GCS officers and members hosted 17 potential students. In all, the GCS is looking forward to welcoming the 13 new students who will begin in the fall at WSU.

The GCS officers for the 2021-2022 school year were very excited to have increased the number of professional development events for our graduate students, as well as to offer social events to help students relax during the stress of graduate school. The new officer group taking over for the 2022-2023 school year hopes to increase these professional development events and to have a full array of events with no complications due to the COVID-19 pandemic.

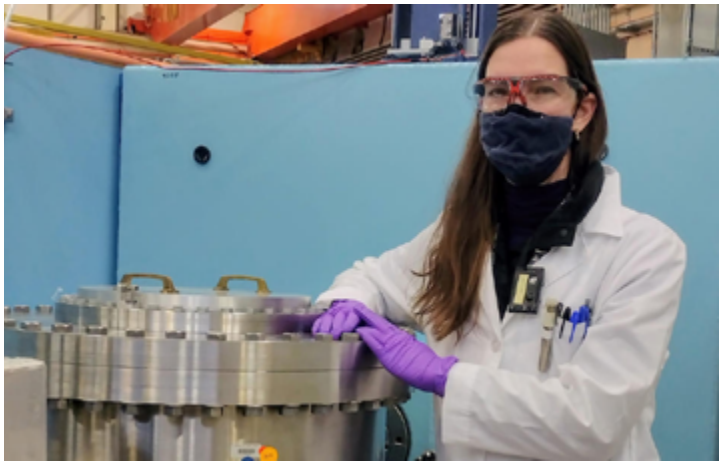
Your GCS Officers
Cole Fisher - President
Haley Schramm - Vice President
Jacob Lewis - Treasurer
Sumeet Chakravorty - Librarian

The newly designed t-shirts for GCS feature our new logo created in coordination with the WSU RSO (registered student organizations) office.

ALUMNI NEWS

Jamie Weaver, PhD ’16 (N. Wall)

Jamie earned her PhD in Chemistry from WSU in 2016 and is now a radioanalytical chemist at the National Institute of Standards and Technology (NIST). She joined NIST as a National Research Council post-doctoral associate in 2017 and was appointed the neutron depth profiling (NDP) instrument custodian in 2018. In November 2021, Jamie contributed to one of NIST’s blogs by giving a behind-the-scenes look at detecting the flavors of important elements with neutron depth profiling.



Weaver with the neutron depth profiling instrument
Credit: T. Barvitskie/NIST

UNDERGRADUATE STUDENTS

Chem 410 (taught by Zach Heiden) celebrated the last day of class by making ice cream with liquid nitrogen.

Below: Some of the senior undergraduate students with Prof. Heiden

Right: PhD student Cole Fisher pours the nitrogen

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 and 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

Bruce Alden McFadden

Bruce was born in La Grande, Oregon, in 1930 to Eugene and Mary McFadden. Two years later he was joined by his younger brother Scott. Bruce loved school and spent his early years in LaGrande, Spokane, and Pasadena, CA. He graduated from John Muir High School. In 1952, Bruce graduated with a BA in chemistry with honors from Whitman College. In 1956, he earned his PhD in biochemistry from the University of California Los Angeles. He became an instructor and later a professor at Washington State University.

Bruce met his wife Roberta in 1956 via his brother Scott's wife, Norma Comrade, and they were married in 1958. Bruce and Roberta welcomed their first son, Paul, in 1959, followed by David in 1962, and John in 1967.

In 1963, he received the National Institute of Health Research Career Development Award at WSU through 1969. In 1964 Bruce was the president of the Washington-Idaho Border Section of the American Chemical Society. In 1965 the American Association for Advancement of Science honored him as a Fellow.

In community service, Bruce presided as president of the Parent Teacher's Association in Pullman in 1965. In 1977, Whitman College awarded an honorary doctor of science degree to Bruce for his substantial and sustained contribution to scientific knowledge and advancements in biochemistry.

Bruce married Jean Toms in 2000, following Roberta's passing. Bruce and Jean enjoyed their time in Palm Springs and Pullman until she passed in 2018. Bruce trained approximately 30 successful doctoral candidates, as well as visiting postdoctoral biochemists, and ran a successful laboratory for 41 years at WSU. In the 1980's, he chaired the biochemistry and biophysics departments at WSU. Bruce enjoyed hiking, traveling, and spending time with his family at their cabin on Priest Lake in the summers. He is survived by his three sons, Paul, David, and John; granddaughters, Meagan and Hannah; and grandsons, Dakota and Ian.

Published by Spokesman-Review on Jul. 17, 2022

IN MEMORIAM CONT.

John Philip Hunt

John Philip Hunt, 98, died Sunday, Aug. 29, 2021, in Pullman. John was born Feb. 2, 1923, in Ann Arbor, Mich., to John Augustus Hunt and Dora Amanda (Adam) Hunt. John's family moved to a small farm northwest of Ann Arbor in 1924, the year his sister, Mary Jane, was born. Brother Robert H. Hunt followed in 1932. John attended a one-room school near home for eight grades, then junior high and high school in Ann Arbor. He earned a bachelor of science degree with honors in chemistry in 1944 at the University of Michigan. From 1944 to 1946, John worked on the Manhattan Project at Oak Ridge National Laboratory as a research chemist. He went on to earn a PhD in chemistry at the University of Chicago in 1950 and completed a postdoctoral fellowship at Chicago in 1951. John was one of 67 Oak Ridge scientists to sign a classified petition to President Truman in 1945 to demonstrate the power of the first nuclear bomb to the world, giving Japan the opportunity to reconsider surrender, before dropping the bomb over Japan.

In 1951, John was hired as an assistant professor of chemistry at Cornell University in Ithaca, NY, where he remained until 1955 when he began a 35-year career at Washington State University in Pullman, retiring as a full professor of chemistry and a Fellow of the American Association for the Advancement of Science. Throughout his career, John helped his graduate students and postdoctoral fellows find teaching and research positions of their own, and many of them remained in contact with him throughout his life. John enjoyed a variety of sports along with gardening, music, art, and reading. He recently recalled a doubles tennis match at the University of Chicago when he and his faculty adviser, Nobel laureate Henry Taube, took on the renowned physicists Enrico Fermi (also a Nobel laureate) and Leo Szilard. Unfortunately, the physicists were better players and won the match.

John married Marjorie Jean Lesher in 1952 and the couple were divorced in 1986. John is survived by three children: Alan John, of Suita-Shi, Japan; Phyllis Jean (David Lind), of Selah, Wash.; and Roberta Marie, of Ranchos de Taos, NM. John also leaves two grandchildren: Marie R. Ray, of Albuquerque, NM; and James L. Ray, of Littleton, Colo.

Published by Moscow-Pullman Daily News on Sep. 4, 2021

David A. Atkinson

David A. Atkinson, 57, passed away peacefully at his home in Richland, WA, on May 10, 2021 following a long, hard-fought battle with lymphoma.

Dave "Big Dog" was born in Carbondale, PA, on January 20, 1964, to Joyce (Rokavec) Atkinson and the late Alan Atkinson. He had two siblings, Diane (Atkinson) Yadlosky and Keith Atkinson.

A graduate of Forest City Regional High School, Dave furthered his education obtaining his BS in Material Science from Pennsylvania State University and his MS and PhD in Analytical Chemistry from Washington State University under the advisement of Professor Herb Hill.

On July 18, 1987, he married Marilyn Barnes in Union Dale, PA. They later had two children together; sons Cooper and Hunter.

Dave began his career in 1992 as a staff scientist at Idaho National Engineering and Environmental Laboratory (now INL) in Idaho Falls, ID, where he directed the Center for Ion Mobility Spectrometry

and conducted work in direct chemical vapor distribution mapping. In 2003, he joined PNNL (Pacific Northwest National Laboratory) in Richland, WA, as a senior research scientist focused on trace organic analytical chemistry research in support of the national security mission. In his nearly 30-year career, Dave is renowned by his colleagues, his sponsors, and his collaborators for being an internationally recognized expert in ion mobility spectrometry and explosives detection. He is the author or co-author of numerous publications, holds nine U.S. patents, and most recently achieved the status of Laboratory Fellow.

Dave's achievements/accomplishments over the years are many, but he was a very humble soul and prefers to be remembered for the person he was and not the things he did. Dave's loss is deeply felt by all who knew him; he will be missed immensely by all. Outside of work, Dave had passions for travel and was known for travelogue slideshows set to music of the region, cooking extravagant meals, mountain hiking, playing guitar, managing an online hockey league he founded, and mentoring local high school students with Science Fair Projects.

He is survived by his loving wife of almost 34 years, Marilyn Atkinson; two sons, Cooper Atkinson (Aberdeen Proving Ground, MD) and Hunter Atkinson at home; mother Joyce Atkinson (Browndale, PA); a sister Diane Yadlosky (Binghamton, NY); a brother Keith Atkinson and wife Danielle (Browndale, PA); and nieces, nephews, aunts, and uncles. Dave was preceded in death by his father, Alan Atkinson.

Published by Tribute Archive

Marianna Merritt Matteson, longtime supporter of Chem students, faculty

Marianna Merritt Matteson, who with her husband, Professor Emeritus of Chemistry Don Matteson, was a long-time supporter of students, faculty, and programs in the Chemistry department, passed away peacefully in Pullman on July 20 at 90 years old.

Marianna was a professor in the Department of Foreign Languages and Literatures at WSU and had served as its chair for 10 years. After earning her master's degree in Spanish in 1956 from then-Washington State College (now WSU), she taught in public schools in West Virginia and at the University of Idaho. In 1965, she joined the faculty at WSU and later completed her PhD in Spanish at the University of Washington–Seattle. Her foreign study experiences took her to Mexico numerous times, and to Colombia, SA, as a Fulbright Scholar.

She also traveled extensively throughout the world during her 51-year marriage to Don, and the couple delighted in experiencing different cultures and geographies on all seven continents. Their home, filled with music, art, books, and collectibles from around the globe, and their robust support of WSU and its educational mission reflect their many interests and generosity of spirit.

Marianna will be greatly missed by all whose lives she touched. To help facilitate student knowledge of anatomy and disease, Marianna donated her remains to WSU's Elson F. Floyd College of Medicine in Spokane.

Gifts to support the Marianna Merritt and Donald S. Matteson Distinguished Professorship in Foreign Languages and Cultures can be made securely online at foundation.wsu.edu/give. A celebration of her life is planned for October 22, 2022, at 4:00 p.m. at the Alumni Center on the Pullman campus. Light appetizers will be served. Please contact Greg Crouch at gcrouch@wsu.edu for more information.

CHEMISTRY **NOTATIONS**

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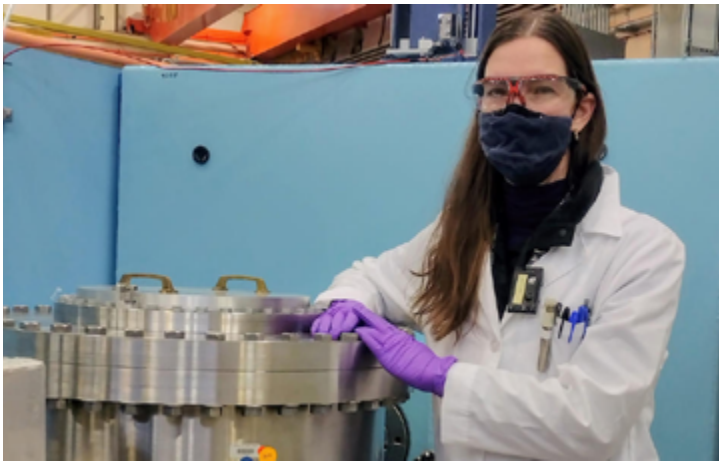

Look inside to find out what's been happening in Chemistry at WSU!