NORM 2024

Breaking Borders: Building Bonds

Conference Program

June 22nd – 27th, 2024
Washington State University
Pullman, WA

Hosted By:

American Chemical Society
WASHINGTON-IDAHO
BORDER SECTION

Up to date Information:

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American Chemical Society

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June 23, 2024

Dear Northwest Regional Meeting Participants:

On behalf of the global American Chemical Society community, I am delighted to extend my warm personal greetings to all of you attending the 2024 ACS Northwest Regional Meeting (NORM) at Washington State University in beautiful Pullman, Washington.

NORM 2024 will kick off on Sunday, June 23, with the opening reception—please stop by and meet ACS governance leaders. Immediately following the reception, you will hear from NORM plenary speakers: Dr. José Almirall, Distinguished Professor Emeritus in Chemistry and Biochemistry at Florida International University and Dr. Susan E. Ebeler, Associate Dean of Undergraduate Academic Program for College of Agricultural and Environmental Sciences (CA&ES) and Professor in the Department of Viticulture and Enology. After the plenary talks, consider attending the "Chemistry in a Glass" Reception.

Under the theme of "Breaking Borders, Building Bonds," please take advantage of the variety of oral and poster sessions and learn about the great science happening in the Northwest region that will promote crosstalk between scientists and engineers from academia, industry, and government on interdisciplinary, multidisciplinary, and cross-disciplinary topics and studies. There will also be an academic and employment recruitment fair, undergraduate poster session, career workshops, and nuclear reactor tours.

On Monday, June 24, the Women Chemists Luncheon will feature keynote speaker Joan Broderick, recipient of the 2019 ACS Alfred Bader Award in Bioinorganic and Bioorganic Chemistry. Later that evening, join us for the University of Idaho and Washington State University Alumni and Friends reception. Immediately following the reception, we will hear from plenary speaker Jorge Cham, creator of the *Piled Higer and Deeper* (PHD Comics), followed by the screening of *The PhD Movie*.

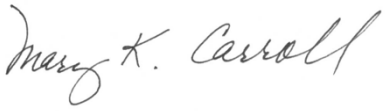
On Tuesday, June 25 the Awards Ceremony will recognize the recipients of the E. Ann Nalley Northwest Region Award for Volunteer Service to the ACS, the Glenn and Jane Crosby Northwest Region Award for Excellence in High School Teaching, and the Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences. The awards ceremony will also include a plenary seminar by Dr. Simon Pimblott, Laboratory Fellow at the Idaho National Laboratory and Nuclear Science and Technology Directorate Chief Scientist.

Don't miss the opportunity to visit NORM 2024 Expo and "build bonds" at Doughnuts with Directors, the Senior Chemists Breakfast, the Safety Luncheon, the Ice Cream Social from Ferdinand's Ice Cream Shoppe, and "break borders" with Crossing the Border into Idaho: Night out in Moscow, ID.

If travel plans have you in Pullman on Saturday, June 22, plan to attend the Breaking Borders: Building Bonds at the Palouse Discovery Science Center where kids of all ages will enjoy engaging, educational, hands-on science exhibits and the Washington-Idaho Border Section will host chemistry activity tables.

With all these great symposia, workshops, and various social events, I want to express my special thanks to the NORM General Chair Zachariah Heiden, Program Committee Chair Kristopher Waynant, the many organizers and volunteers, ACS staff, and especially to our hosts at the Washington-Idaho Boarder Local Section for their hard work and dedication to create an intellectually stimulating, diverse and inclusive experience here in Pullman.

Best wishes for a most successful 2024 NORM!



Mary K. Carroll
President
American Chemical Society

Northwest Region Board of Directors
NOR Board

Dear Colleagues:

Welcome to the 2024 American Chemical Society (ACS) Northwest Regional Meeting (NORM2024) on the beautiful campus of Washington State University in Pullman, Washington. The meeting theme, *Breaking Borders: Building Bonds*, focuses on collaborations in science, education and the many issues society currently faces. It is my hope that the program will initiate meaningful discussions on the roles of chemistry and chemical education in addressing the complex systems that influence outcomes. I anticipate that NORM2024 will produce valuable exchanges of knowledge across the Pacific Northwest, Alaska and beyond, and catalyze new collaborations across the chemical enterprise that engage researchers and educators alike.

The overall objectives of ACS are to support and promote the safe, ethical, responsible, and sustainable practice of chemistry coupled with professional and inclusive behavior and technical competence while recognizing a responsibility to safeguard the health of the planet and the people who live on it, through chemical stewardship. The ACS NOR Board working with ACS Meetings and Expositions provides support for ACS local sections of the Pacific Northwest and Alaska as they plan and execute NORM events that contribute to these objectives.

The NORM2024 Local Organizing Committee (LOC) of the Washington Idaho Border Section, led by Drs. Zachariah Heiden and Kristopher Waynant, has worked diligently to assemble a varied and comprehensive program. The leadership exhibited by General Chair Heiden over the past two years has been inspirational and the NOR Board commends his and his team's efforts, persistence and success in constructing a NORM that reflects the multi-disciplinary and collaborative nature of successful chemical endeavors. The NOR Board extends gratitude to the LOC. A special thank you to participants that have contributed oral and poster presentations. The members of ACS are what makes it great.

I am delighted to welcome you to the beautiful Palouse and wish you an enjoyable and rewarding experience at NORM2024.

Lisa Hoferkamp
Chair, NOR Board, Inc. 2023 - 2026
Northwest Region Board of Directors

American Chemical Society
Email. lahoferkamp@alaska.edu

Dear guests,

Thank you for visiting Pullman. We are so glad you are here!

There are countless things to see and do in our city and beyond, and we hope you have a great time experiencing everything our community has to offer.

From hiking our majestic buttes and biking the Washington-Idaho border to browsing museums and sauntering through our historic downtown, your stay in our city is sure to take on an adventure or two!

Should you need more information on activities and places in our region, we strongly encourage you to stop by our Visitor Center located at 415 N. Grand Ave., where we house an extensive collection of information about the city of Pullman and Washington State University in addition to a variety of locally made souvenirs, the perfect items commemorate your visit to Pullman!

Welcome to Pullman. We hope your visit is one to remember!

Warm regards,

Marie Dymkoski

Marie Dymkoski
Executive Director
Pullman Chamber of Commerce and Visitor Center

Wireless at NORM 2024

Washington State University Guest Network details:

- Guests receive a three-day lease for network access.
- The email address is used as the username and an auto-generated six-digit password is created for the guest.
- An email with the username, password, and lease length for WSU Guest access is sent to the email address. A guest can use the same login credentials on up to 10 devices at once.
- Once you connect to the network, most wireless devices will save the login credentials and you will not have to type them in again until after the three-day lease has expired.

Registration at NORM 2024

All NORM 2024 events will require the presence of a NORM 2024 badge. Badges can be obtained from the registration desk during the hours indicated below:

Sunday, June 23rd

1:00 PM – 7:00 PM (Compton Union Building, Second Floor Mezzanine)

Monday, June 24th

7:00 AM – 5:00 PM (Compton Union Building, Second Floor Mezzanine)

Tuesday, June 25th

7:00 AM – 5:00 PM (Compton Union Building, Second Floor Mezzanine)

Wednesday, June 26th

7:00 AM – 3:00 PM (Center for Undergraduate Excellence, Room 209)

NORM 2024 Local Organizing Committee

General, Expo, and Sponsorship Chair

Zachariah Heiden
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Program Chair

Kristopher Waynant
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Expo & Sponsor Liaison

Erin Linskey
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ACS Governance

Dorothy J. Phillips

President-Elect

Natalie A. LaFranzo

Director-At-Large

Lee H. Latimer

Director-At-Large

Jeanette M. Van Emon

Director, District VI

Plenary/Keynote Speakers

Sunday, June 23 (7:00 – 8:30 pm, CUB Auditorium)

"National Science Foundation; Programs in the Chemistry Division and Beyond"
Presented by: Jose Almirall, National Science Foundation

José R. Almirall is Distinguished University Professor Emeritus in Chemistry and Biochemistry at Florida International University in Miami. He received a BS in Chemistry from FIU, a MS in Chemistry from the University of Miami and a PhD in Chemistry from the University of Strathclyde. He began his career at the Miami-Dade Police Department forensic laboratory as a practicing forensic chemist where he worked for 12 years prior to his academic appointment at FIU in 1998. He was the founding co-Director of the International Forensic Research Institute at FIU (1997) and the founding graduate program director of the MS in Forensic Science program at FIU (1998). He was also the founding Director of the NSF-funded Center for Advanced Research in Forensic Science (CARFS) at Florida International University. His research interests include development of mass spectrometry, atomic spectroscopy, and molecular spectroscopy measurement science for improving the forensic examination of controlled substances, explosives, and trace evidence (materials). His research group has also been interested in developing statistical tools to improve the interpretation of chemical data in the forensic context. Prof. Almirall and his group have authored more than 165 peer-reviewed publications in analytical and forensic chemistry, and he currently serves as the co-Editor-in-Chief of Forensic Chemistry, an Elsevier journal. Prof. Almirall joined the National Science Foundation (NSF) in August of 2022 as a Program Director rotator in the Division of Chemistry, Chemical Measurement and Imaging (CMI) and Major Research Instrumentation (MRI) programs.

"Chemistry in a Glass: The Borders and Bonds of Wine Chemistry"
Presented by: Susan Ebeler, University of California, Davis

Dr. Sue Ebeler is the associate dean of Undergraduate Academic Programs for the College of Agricultural and Environmental Sciences (CA&ES) and a professor in the Department of Viticulture and Enology. She earned her Ph.D. in agricultural and environmental chemistry and an M.S. in food science from UC Davis, and her B.S. in food science from the University of Nebraska, Lincoln, NE. Her research seeks to answer questions about food and beverage flavor, quality and health effects. In her research, she uses analytical tools including gas chromatography-mass spectrometry, high performance liquid chromatography-mass spectrometry, and inductively coupled plasma mass spectrometry to study the effects of agricultural practices, fermentation, processing, and storage on composition of grapes, wines, and other foods and beverages. By linking compositional and sensory information, this research reveals information about how aroma compounds interact with each other and with food matrix components to contribute to complex food and beverage flavors.

Chemistry in a Glass Reception sponsored by House of Smith will follow the opening plenary talks.

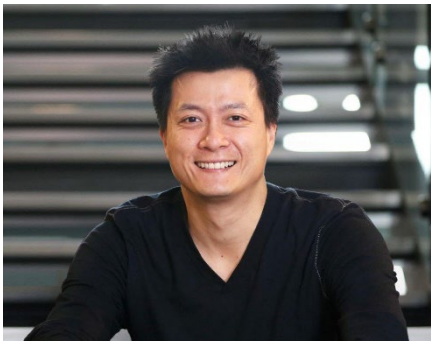
Monday, June 24 (12:00 – 1:30 pm, CUB Junior Ballroom)

Women in Chemistry Committee Luncheon Keynote Speaker
Joan Broderick, Montana State University

Dr. Joan Broderick received her B.S. in Chemistry from Washington State University and later her M.S. and Ph.D. in Inorganic Chemistry from Northwestern University. She completed a post-doctoral fellowship at MIT and then started her career at Amherst College as an Assistant Professor of Chemistry. She transitioned to Michigan State University where she was a Professor of Chemistry until 2005 when she moved to Montana State University. She was awarded the title of Women in Science Distinguished Professor in 2014 and currently serves as the Department Head of the Chemistry and Biochemistry Dept.

Monday, June 24 (7:00 – 9:30 pm, CUB Auditorium)

"The Power of Procrastination"
Presented by: Jorge Cham, Creator of PhD Comics and The PhD Movies



Jorge Cham is the creator of Piled Higher and Deeper (PHD Comics), the popular comic strip about life (or the lack thereof) in Academia. He is also the co-founder of PHD TV, a video science and discovery outreach collaborative, the best-selling author of several non-fiction books for kids and adults, and the Emmy-nominated creative director and co-creator of the PBS Kids animated series Elinor Wonders Why. Dr. Cham obtained his B.S. from Georgia Tech and his M.S. and Ph.D. from Stanford University, specializing in Robotics. He was subsequently an Instructor and Research Associate at Caltech from 2003-2005, where his work focused on developing "Smart" Neural Implants. He travels and presents all over the world to thousands of graduate students, faculty and administrators on the graduate student experience.

A screening of The PhD Movie will occur at the conclusion of Dr. Cham's plenary talk.

Tuesday, June 25 (7:00 – 8:00 pm, Pavilion at Palouse Ridge Golf Course)

NORM 2024 Awards Dinner Plenary Talk
"Nuclear – The Energy of Tomorrow"
Presented by: Simon Pimblott, Idaho National Laboratory

Dr Simon M. Pimblott has over 35 years of experience in the field of nuclear energy sciences, working closely with the US Department of Energy and the UK Nuclear Decommissioning Authority, Currently, a Laboratory Fellow in at INL, Dr Pimblott is the Chief Scientific Officer for the Nuclear Science & Technology Directorate. Prior to joining INL in 2017, he was the Chair Professor in Radiation Chemistry and the founding Director for the Dalton Cumbrian Facility (DCF) at The University of Manchester. The DCF was established to address the engineering decommissioning and scientific challenges associated with the UK nuclear industry, and particularly the Sellafield site. Professionally, Dr Pimblott is recognized as a Fellow of the Royal Society of Chemistry, and is the Chair-elect of the Materials Science &Technology Division of the American Nuclear Society. He held the UK Engineering and Physical Sciences Research Council's Energy Research Chair in Radiation Chemistry from 2007 to 2012. In 1999 he was the 27th Michael Fry Radiation Research Awardee – the most accomplished radiation scientist under 40 years of age, and in 2011 Dr. Pimblott and the development of the DCF project played a major role in the award of the Queen's Anniversary Prize for Higher and Further Education to the Dalton Nuclear Institute for excellence in nuclear energy research and education. He has acted as technical lead for major research programs in disparate areas across the field of nuclear energy research, specifically: fuel performance, management, and disposition; radiation effects in nuclear materials and fuels; LWR chemistry and corrosion processes; chemistry of nuclear reprocessing systems; and radioactive waste management and decommissioning.

Award Winners

The Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences

This award recognizes individuals and/or institutions who have advanced diversity in the chemical sciences and significantly stimulated or fostered activities that promote inclusiveness within the region.

Congratulations Kristopher V. Waynant, Ph.D., University of Idaho

Dr. Waynant is an Associate Professor of Chemistry and the Director of the Office of Undergraduate Research (OUR) at the University of Idaho in Moscow, ID. Trained as an organic chemist, his current research spans a variety of subdisciplines from ligand design for both metal dissolution and catalysis to peptide chemistry and the construction of zwitterionic cross-linkers for polyampholyte materials. As OUR Director, he meets regularly with students to introduce them to research and the opportunities in research careers. He has led many projects on introducing research in the first-year curriculum both as inquiry-based and as course-based undergraduate research experiences (CUREs). He currently leads an NIH Bridges to Baccalaureate program and is the PI of a new NSF REU Site program titled “Elements of Sustainability”. He leads many outreach activities hosting students for ACS events (i.e., USNCO) and as the Councilor for the Washington Idaho Border Section, serves as a member of Project SEED promoting research for to High schoolers throughout the region and the country.

The E. Ann Nalley Northwest Region Award for Volunteer Service to the American Chemical Society

This award recognizes the volunteer efforts of an individual who has served the American Chemical Society and contributed significantly to the goals and objectives of the Society through their regional activities.

Congratulations Despina Strong, Ph.D.!

Dr. Strong has been an active member of ACS for over 40 years, serving as the Chair or as a member for multiple committees and founding two of her own at the local section. She has been the Chair of the local section two times (1992, 2014) and she served as the Education Committee Chair for three years. Strong initiated the Senior Chemists Committee (SCC, 2017) and the Women Chemists Committee (WCC, 2020) where she is currently serving as the first Chair for both. She organizes events to engage members and to promote networking. Strong is a founding member of the Diversity, Equity, Inclusion and Respect committee and leads the Diversity Book Discussion Group. In 2021, Strong participated in the revision of the section’s bylaws making significant contributions during the process. At the Regional level Strong participated in the Northwest Regional (NORM) meetings organizing and /or participating in symposia and events on behalf of the SCC and the WCC. At the National level,

Strong is in her third 3-year term as a councilor for the Puget Sound Section, and she is currently an active member (8 years) on the national WCC. As a member of WCC, she leads one of the three major goal areas of the committee and serves on the WCC leadership team. Strong volunteered and chaired the District VI Caucus twice and served as its secretary twice. She participates actively at the National level where she forged relationships with members of the Minority Affairs Committee, WCC and SCC as well as with ACS staff and leadership.

The Glenn and Jane Crosby Northwest Region Award for Excellence in High School Teaching

This award recognizes the efforts of extraordinary high school teachers. The awardee is chosen based on the quality of their teaching as evidenced by incorporation of unusually effective teaching methods, ability to challenge and inspire students, willingness to keep up to date in chemistry, and extracurricular work in chemistry or a chemical science.

Congratulations Jennifer Pollard, Ph.D.!

Jennifer Pollard is a chemistry teacher and department chair at Moscow High School, in Moscow, Idaho. She received her Ph.D. at the University of Idaho in physical chemistry, having earned a biochemistry degree, K-12 physical science teaching credential and then an M.A. in education at CalPoly, San Luis Obispo. Her love of the Palouse convinced her to stay as a teacher in the area. Her classes now include: dual credit chem 101, dual credit chem 111 (also advanced placement), and high school chemistry. She focuses on “doing chemistry” by integrating labs, activities and content on a day to day basis, and covering regionally important topics such as nuclear chemistry. An integral part of the region’s high school curriculum and a strong supporter of furthering hands-on learning in chemistry, Dr. Pollard has built a strong chemistry program at Moscow High School, integrating dual-credit chemistry with the University of Idaho Chemistry Department’s curriculum and initiating AP curriculum into Moscow High. Dr. Pollard frequently partners with the UI Department of Chemistry to show her classes new and exciting instrumentation. Dr. Pollard’s work has been supported by numerous grants from the Idaho Space Grant Consortium, the Genesee Education Fund and the Office of Energy Resources to help build physics and engineering programs as well as increase the use of solar cells and solar panels at local schools.

NORM 2024 Sponsors

Platinum (Conference Host)

American Chemical Society WASHINGTON-IDAHO BORDER SECTION	We are a local section of the American Chemical Society consisting of about 120 members. We serve the Pullman, Moscow, Clarkston, and Lewiston area in southeastern WA and Idaho panhandle and are the host of NORM 2024. https://www.wibs-acs.org/

Gold ($5,000 - $9,999)

University of Idaho Department of Chemistry	The Chemistry Department at University of Idaho offers B.S. and research M.S. and Ph.D. degrees in Chemistry. For the student who wants to pursue a graduate degree or will work in a field related to chemistry, we offer the Professional B.S. in Chemistry, which is the degree accredited by the American Chemical Society. For students interested in pursuing careers in medicine, dentistry, and pharmacy we offer a B.S.-Pre Med. https://www.uidaho.edu/sci/chem/about
NUCLEAR SCIENCE CENTER WSU	The Washington State University Dodgen Research Facility is located at WSU Pullman. The facility houses the Nuclear Science Center which maintains oversight of WSU's 1 MW TRIGA research nuclear reactor. The Center is a multidisciplinary teaching, research, and service endeavor designed to make high impact contributions to nuclear science, national and international security, nuclear non-proliferation, and emergency readiness. https://nsc.wsu.edu/
WASHINGTON STATE UNIVERSITY School of Mechanical and Materials Engineering	The School of Mechanical and Materials Engineering at WSU has one of the largest undergraduate programs in the Pacific Northwest, with about 1000 students and 45 faculty members spread across three sister campuses. Our graduate student and postdoctoral researcher populations are growing, underpinned by continuously increasing annual research expenditures (currently over $9m), with over 100 PhD students. It is one of few schools where both Mechanical Engineering and Materials Science and Engineering programs are offered under the same roof, allowing our students to be reared in a highly interdisciplinary, enriching environment. https://mme.wsu.edu/

Silver ($2,500 - $4,999)

ACS Division of Nuclear Chemistry & Technology https://www.nucl-acs.org/	ACS Chemistry for Life® https://www.acs.org/
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HOUSE OF SMITH K | SIXTO | CASASMITH | SUBSTANCE | GOLDEN WEST | Bleighton | VINO https://houseofsmith.com/	MIRION TECHNOLOGIES www.mirion.com
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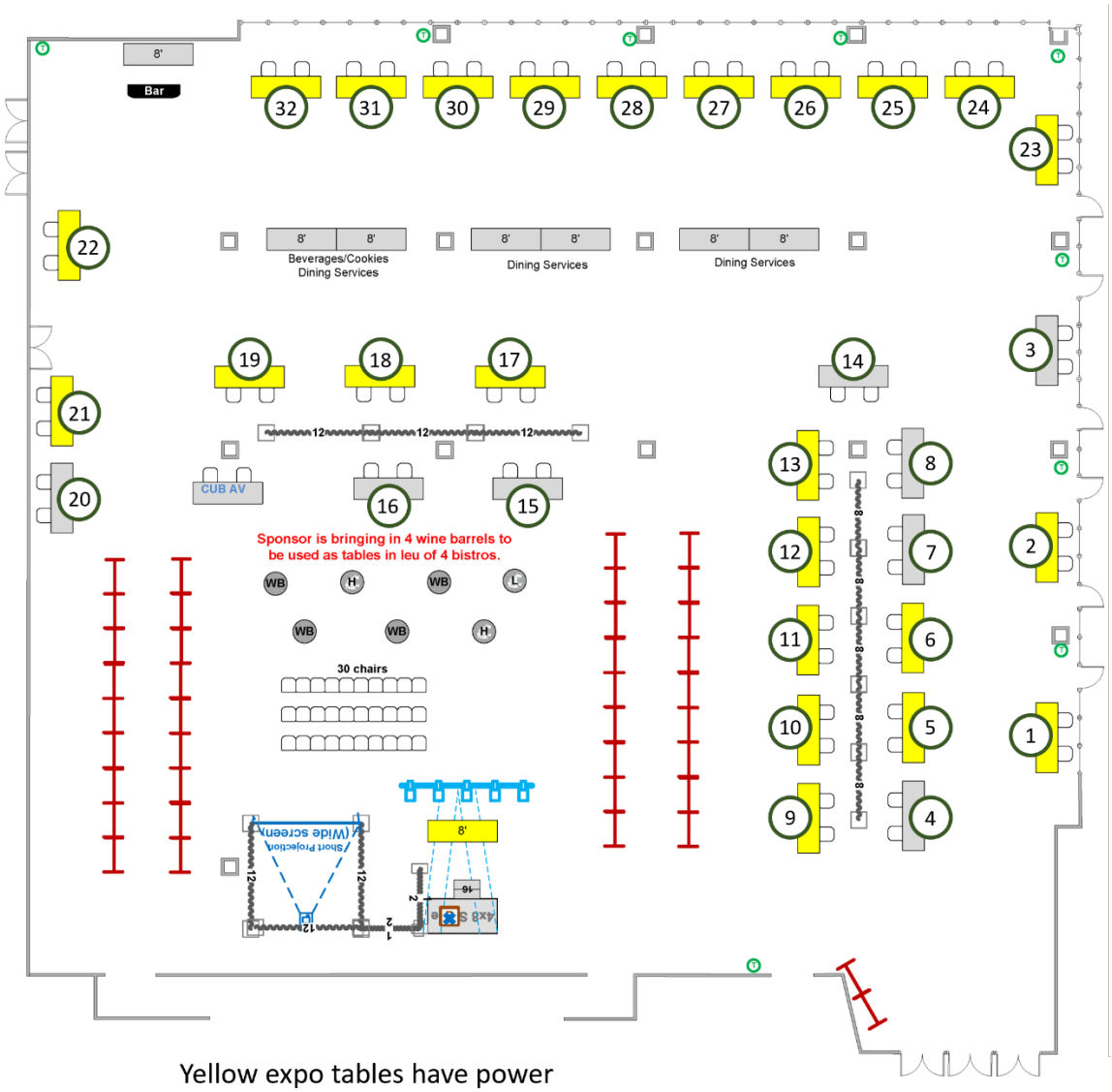
Copper ($1,000 - $2,499)

Division of Analytical Chemistry ACS	ACS Local Section Inland Northwest	AK Scientific
Alturas Analytics, Inc. The LC-MS Experts	fisher scientific part of Thermo Fisher Scientific	Visit Pullman Washington

Nickel (Up to $500)

ACS Technical Division Colloid and Surface Chemistry (COLL)	ACS Committee Senior Chemists	Division of Medicinal Chemistry
Another Round Brewing Co.	Colter's Creek	Merry Cellars
CATL ACS Division of Catalysis Science and Technology	ENFL ACS Division of Energy & Fuels	ACSenvr ACS Division of Environmental Chemistry
Klarquist	University of Idaho Department of Chemical and Biological Engineering	Washington State University Gene and Linda Voiland School of Chemical Engineering and Bioengineering
Rivaura	Moscow chamber of commerce + visitor center	

NORM 2024 Exhibitors



Yellow expo tables have power

1) ACS Membership
2) Mirion Technologies
3) WSU Nuclear Science Center
4) ChemScene LLC
5) Bettersize Inc.
6) Biotage
7) Fisher Scientific
8) Fisher Scientific
9) JEOL
10) Oakwood Chemical
11) LECO
12) SCIEX
13) Pine Research Instrumentation
14) RAIN Incubator
15) MacMillan Learning
16) Eldex Corporation
17) IKA
18) Center for Advanced Energy Studies
19) Oxford Instruments
20) Bruker AXS
21) Bruker Magnetic Resonance
22) Agilent Technologies
23) Shimadzu
24) Nanalysis Corp.
25) Klar Scientific
26) Velp Scientific, Inc.
27) Proteios Technology Inc.
28) Magritek
29) Process Insights
30) Chemwatch
31) Anatek Labs Inc.
32) Washington-Idaho Border Section

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ANATEK LABS	Anatek Labs, Inc. is a full service environmental analytical testing laboratory, established in 1992, with offices in Moscow, ID and Spokane, WA, and branch offices in Yakima and Wenatchee, WA. Our mission is to provide precise and accurate analytical data and technical assistance to our clients in a timely and cost-effective manner. We test drinking water samples for community water services and private well customers, as well as water and environmental samples for environmental, industrial, and agricultural clients. https://www.anateklabs.com/
Bettersize	Bettersize is a leading manufacturer of analytical instruments. Our product range covers basic to advanced particle analysis instruments to provide precise analysis results of particle size, particle shape, zeta potential and powder characteristics helping scientists and engineers understand material properties and optimize research and production. With strict quality control and exceptional customer service, our instruments are trusted by over 17,000 businesses. www.bettersizeinstruments.com
Biotage®	Biotage is the Global Go-To Separations Company, supporting customers from drug discovery and development through to diagnostics and analytical testing with intelligent and sustainable workflow solutions. Our expertise and top-tier separation solutions play a key role in streamlining our customers' workflows and improving their outcomes. Headquartered in Sweden, Biotage operates globally with 700 employees, serving over 80 countries. Our company is listed on NASDAQ Stockholm (BIOT). https://www.biotage.com/
BRUKER	Bruker is a developer, manufacturer and distributor of high-performance scientific instruments and analytical and diagnostic solutions that enable our customers to explore life and materials at microscopic, molecular and cellular levels. Many of our products are used to detect, measure and visualize structural characteristics of chemical, biological and industrial material samples. https://www.bruker.com/en.html

CAES Center for Advanced Energy Studies	The Center for Advanced Energy Studies (CAES) is an academic-government-industry consortium comprised of the US Department of Energy's Idaho National Laboratory, the public research universities of Idaho (Boise State University, Idaho State University and University of Idaho) and industry collaborators. Through world-class collaborative research, CAES innovates to secure the nation's energy future. CAES strives to create new knowledge and the next generation of scientists and engineers through education and research. https://www.caes.org
ChemScene Chemical Reagents For Life Science	ChemScene is a chemical supplier for small molecules and building blocks. With 76k+ in stock catalog available and competitive custom synthesis ability, ChemScene is eager to help support R&D. Let us save your time and budget while your R&D saves the world. https://www.chemscene.com/
CHEMWATCH	Regulatory and compliance responsibilities of companies are becoming more complex and wide-ranging every year. Dedicated chemical management software at Chemwatch has gone far beyond storing your SDS. As well as storing, Chemwatch's dedicated chemical management software also automatically updates your SDS, and continuously tracks and updates your safety and risk profiles, environmental performance, and storage and signage needs. It generates labels and mini SDS for employee safety and product/company compliance across multiple jurisdictions. www.chemwatch.net
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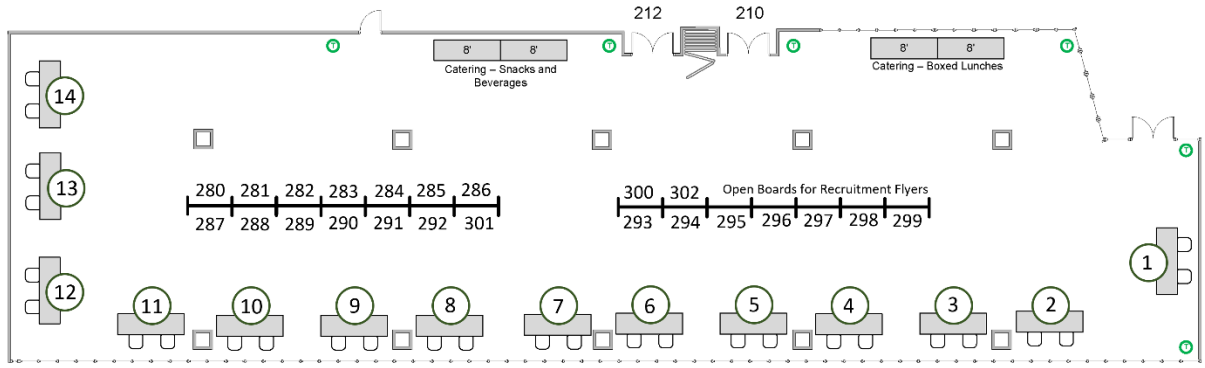
NUCLEAR SCIENCE CENTER WSU	The WSU Nuclear Science Center (NSC) provides a collaborative environment where WSU faculty, staff, students, and clients can succeed in their basic and applied nuclear science research goals. The NSC prepares WSU students for successful entry into the scientific workforce, provides the pathway to discovery in novel research, and makes impactful contributions to science and to the people who work and study here. The Center is a multidisciplinary teaching, research, and service endeavor designed to make high-impact contributions to nuclear science, national and international security, nuclear non-proliferation, and emergency readiness. https://nsc.wsu.edu/
Oakwood Chemical Enabling Discovery	Oakwood Chemical, a U.S.-based manufacturer and distributor, supplies research chemicals to the pharmaceutical, agrochemical, and materials research communities. Over 40,000 quality assured compounds in stock in over 150,000 containers ready to ship to you today from our plant located in Estill, SC. www.oakwoodchemical.com
OXFORD INSTRUMENTS	Oxford Instruments materials analysis solutions enable you to accurately analyze and characterize materials down to the nanoscale level more rapidly, by combining superior detection and analysis instruments with software that interpret the resulting data in the context of your research. Innovation has been the driving force behind Oxford Instruments' growth and success for over 60 years, supporting its core purpose to address some of the world's most pressing challenges. https://www.oxinst.com/
PINE research	Pine Research Instrumentation is a world leader in design and manufacturing of electrochemistry research products, including potentiostats, electrodes and electrode rotators, cells and glassware, and accessories. Additionally, Pine Research offers innovative software programs and tools, such as electrochemical simulation and EIS circuit fitting licenses perfect for both teaching curricula and research labs. https://pineresearch.com

Process Insights	Process Insights provides real-time analytical instrumentation, gas and water analysis solutions, and safety products for a variety of industries including industrial manufacturing, lab, chemical, life science, mining, metals processing, environmental, and more. Our analytical measurement solutions and technologies ensure safe operations, increase production quality, improve asset lifecycle while optimizing levels of efficiency and throughput across your process and quality control. https://www.process-insights.com/
Proteios Technology	Protein Technology is a Seattle-based company founded to share novel protein purification technology developed at the University of Washington. The technology has been expanded to discover and manufacture advanced therapeutics. Proteios has developed a series of RapidPro protein purification kits that enable effective, efficient, scalable, and safe purification of a wide range of proteins - including metalloproteins. Our eco-friendly four-step method provides rapid access to milligram quantities of your target protein. www.proteios.com
RAIN INCUBATOR	RAIN Incubator is a non-profit, biotech-focused incubator located in downtown Tacoma, WA, that has approximately 2500 square feet of shared and individual wet-lab space outfitted with standard molecular biology equipment. We also provide business, technical, and logistic support, networking opportunities, and connections to local universities. RAIN supports local STEM education by providing paid internships for college students to gain valuable hands-on experience. Incubator companies may choose to participate in this program. www.rainincubator.org
SCIEX The Power of Precision	SCIEX empowers our customers to solve the most impactful analytical challenges in quantitation and characterization. With groundbreaking innovation and outstanding reliability and support, SCIEX has been at the forefront of the field for over 50 years. Since the launch of the first-ever commercially successful triple quadrupole in 1981, we continue to develop technologies and solutions that influence life-changing research and outcomes. That's why thousands of life science experts around the world choose SCIEX to get the answers they can trust. www.sciex.com
SHIMADZU Excellence in Science	Established in 1875, Shimadzu Corporation is one of the largest suppliers of analytical instrumentation, physical testing, and environmental monitoring systems in the world. Ground-breaking, Nobel Prize winning scientific research and a strong commitment to innovative hardware and software solutions continue to propel Shimadzu's outstanding reputation of 'Excellence in Science.' A majority of Shimadzu's instruments are manufactured in Canby, OR and with local teams of service, technical support, and sales strategically positioned throughout the PNW, Shimadzu offers the highest level of personalized service and support. www.ssi.shimadzu.com

VELP SCIENTIFICA	Established in 1983, VELP Scientifica is one of the world's leading manufacturers of analytical instruments and laboratory equipment that has made an impact on the world-wide market with Italian products renowned for innovation, design and premium connectivity. VELP is a family-owned company in its second generation of leadership and is recognized globally as a premium supplier of high-quality elemental analyzers, Kjeldahl analyzers, solvent extractors, fiber extractors, oxidation stability reactors, and stirring/mixing equipment. www.velp.com
American Chemical Society WASHINGTON-IDAHO BORDER SECTION	We are a local section of the American Chemical Society consisting of about 120 members. We serve the Pullman, Moscow, Clarkston, and Lewiston area in southeastern WA and Idaho panhandle and are the host of NORM 2024. https://www.wibs-acs.org/

NORM 2024 Academic and Employment Fair Exhibitors

CUB Junior Ballroom (11:00 am – 2:30 pm)



1) Washington State University Chemistry Department
2) University of Idaho Chemistry Department
4) Alturas Analytics, Inc.
6) WSU – PNNL Nuclear Technology Institute
8) WSU Nuclear Science Center
10) PNNL – WSU Distinguished Graduate Fellowship
12) Department of Chemistry at UC Riverside
13) Oregon State University Chemistry Department
14) Department of Chemistry at the University of Nevada, Reno

Alturas Analytics, Inc. The LC MS Experts	Alturas Analytics, Inc. is a bioanalytical laboratory and CRO located in beautiful Moscow, Idaho. For over two decades, we have crafted a talented and experienced scientific team dedicated to supporting drug discovery and development programs and new drug approvals. Our vision supports transformative medicines for a healthier future. We are a growing, privately-owned company specializing in method development, validation, and sample analysis in all biological matrices in support of therapeutic development programs. www.alturasanalytics.com
Oregon State University	Oregon State University's chemistry courses provide a wide range of learning options for students interested in expanding their chemistry knowledge at a location and schedule that works for them. The Department of Chemistry offers courses through the ecampus office, but also digitally through our department which we refer to as either online or hybrid courses. Online courses are offered in a fully digital format. https://chemistry.oregonstate.edu/

NSTI Nuclear Science & Technology Institute Pacific Northwest National Laboratory Washington State University	The WSU-PNNL Nuclear Technology Institute aims to advance knowledge and the applications of that knowledge in nuclear science and technology, and to create the next-generation nuclear workforce, through effective research partnerships between Pacific Northwest National Laboratory (PNNL) and Washington State University (WSU). https://natlab.wsu.edu/nuclearscience/
UC Riverside University of California | Department of Chemistry	The Department of Chemistry at UC Riverside is a rapidly growing department, with outstanding faculty, increasing students, new research programs in multidisciplinary areas of the chemical sciences, and state-of-the-art instrumentation continues added to our Analytical Chemistry Instrumentation Facility (ACIF) to support our research programs. These changes are making our department even stronger and more diverse, and are making our department even more attractive as a place to study chemistry. https://chem.ucr.edu/
University of Idaho Department of Chemistry	The Chemistry Department at the University of Idaho offers B.S., M.S., and Ph.D. degrees. Undergraduate majors can choose between General, Professional, Pre-Med, and Forensic B.S. degree options. Of these, the Professional B.S. degree is certified by the American Chemical Society. Ph.D. and M.S. students can conduct research in Analytical, Inorganic, Organic, and Physical Chemistry. Projects with an emphasis on biological and environmental studies are especially popular. A non-thesis option is also available for the M.S. degree. The Department has an excellent suite of instrumentation and ample laboratory space. Our faculty is of the highest caliber, both as teachers and as researchers. We are eager to enroll new students and to prepare them for a rewarding career in Chemistry! https://www.uidaho.edu/sci/chem
University of Nevada, Reno	The Department of Chemistry at the University of Nevada, Reno is a teaching- and research oriented department offering graduate degrees in Chemistry (MS and PhD) and Chemical Physics (PhD, joint with the Department of Physics). Our graduate students participate in state-of-the-art research within all fields of modern chemistry. As a relatively small program, we are provide close interactions among our faculty and students. www.unr.edu/chemistry

College of Arts & Sciences Department of Chemistry	Chemistry is the “central science” and we are excited about the transformational discoveries and educational advances that our faculty, staff, students, and alumni contribute to every day. Apply to our program and you too can be a part of our scientific breakthroughs. Our three focus areas are chemistry of radiological systems; materials and interfacial science; and chemistry of biological systems. https://chem.wsu.edu/
NUCLEAR SCIENCE CENTER WSU	The WSU Nuclear Science Center (NSC) provides a collaborative environment where WSU faculty, staff, students, and clients can succeed in their basic and applied nuclear science research goals. The NSC prepares WSU students for successful entry into the scientific workforce, provides the pathway to discovery in novel research, and makes impactful contributions to science and to the people who work and study here. The Center is a multidisciplinary teaching, research, and service endeavor designed to make high-impact contributions to nuclear science, national and international security, nuclear non-proliferation, and emergency readiness. https://nsc.wsu.edu/
PNNL	Through the PNNL-WSU Distinguished Graduate Research Program (DGRP), Ph.D. students will earn a stipend along with benefits, funded by their WSU and PNNL advisors, while working under a prestigious graduate committee on nationally relevant research. It is a unique opportunity to tap into the knowledge and world-class research infrastructure available at both institutions. https://natlab.wsu.edu/dgrp/

NORM 2024 Events

June 22nd (1 – 3 pm)

Breaking Borders: Building Bonds at the Palouse Discovery Science Center

Sponsored by the WSU Nuclear Science Center

Join us for family fun at the Palouse Discovery Science Center! Kids of all ages will enjoy engaging, educational, hands-on science exhibits throughout the Center, and the Washington – Idaho Border Section will host chemistry activity tables designed for ages 3 – 12 that feature tie-dye shirt making (you get to keep the shirt!), slime-making (you get to keep the slime!), beads that reversibly change color when exposed to UV-light (you get to keep these too!), as well as a fun, color-changing demonstration of chemical reactivity. Admission to the Palouse Discovery Science Center is free for all between 1 – 3 pm.

June 23rd (5 – 7 pm)

Opening Reception with ACS Governance

Leading up to the opening plenary session on June 23rd, there will be an opening reception in the exposition hall (Compton Union Building, Senior Ballroom) sponsored by ACS Governance.

June 23rd (8:30 – 10 pm)

Chemistry in a Glass – Wine & Beer Reception

Sponsored by House of Smith

Following the opening plenary lectures there will be a wine and beer reception, sponsored by House of Smith Winery, in the Senior Ballroom of the Compton Union Building.

June 24th (7:00 – 8:00 am)

Donuts with Directors

Join us for an in-person and virtual panel with NSF program officers. Doughnuts will be provided to registrants in CUE 202.

June 24th (9:50 to 10:20 am)

Morning Coffee and Snack Break

Sponsored by ChemScene

Enjoy a coffee and snack break in the CUB Senior Ballroom with break sponsor ChemScene, who will host a focus group from 9:55 to 10:15 am at the Expo Stage.

June 24th (12:00 to 1:30 pm)

The Women Chemists Committee (WCC) Luncheon

Honoring Joan Broderick, 2019 ACS Alfred Bader Award winner in Bioinorganic or Bioorganic Chemistry and a Washington State University alum. The program will include an update from representatives of the national WCC and a keynote address by Dr. Broderick in the CUB Junior Ballroom (Room 212). She will describe key milestones, motivating forces, scientific and personal passions and challenges that drove her career decisions, and triumphs.

June 24th (12:00 to 1:30 pm)

Pizza Lunch

Sponsored by NORM Expo

To help Break Borders and Build Bonds, for the individuals not attending the WCC Luncheon, there will be a pizza lunch available in the CUB Senior Ballroom sponsored by the NORM exhibitors.

June 24th (3:05 to 3:25 pm)

Afternoon Coffee and Snack Break

Sponsored by Bettersize

Enjoy a coffee and snack break in the CUB Senior Ballroom with break sponsor Bettersize, who will host a focus group from 3:05 to 3:25 pm at the Expo Stage.

June 24th (5:00 to 6:30 pm)

University of Idaho and Washington State University Alumni and Friends Reception

Sponsored by Merry Cellars, Rivaura, and Colter's Creek Winery

In an effort to break borders and build bonds: Washington State University and the University of Idaho would like to invite alumni, friends, and colleagues to reconnect at a reception in the CUB Junior Ballroom.

June 24th (8:00 to 9:00 pm)

Screening of The PhD Movie

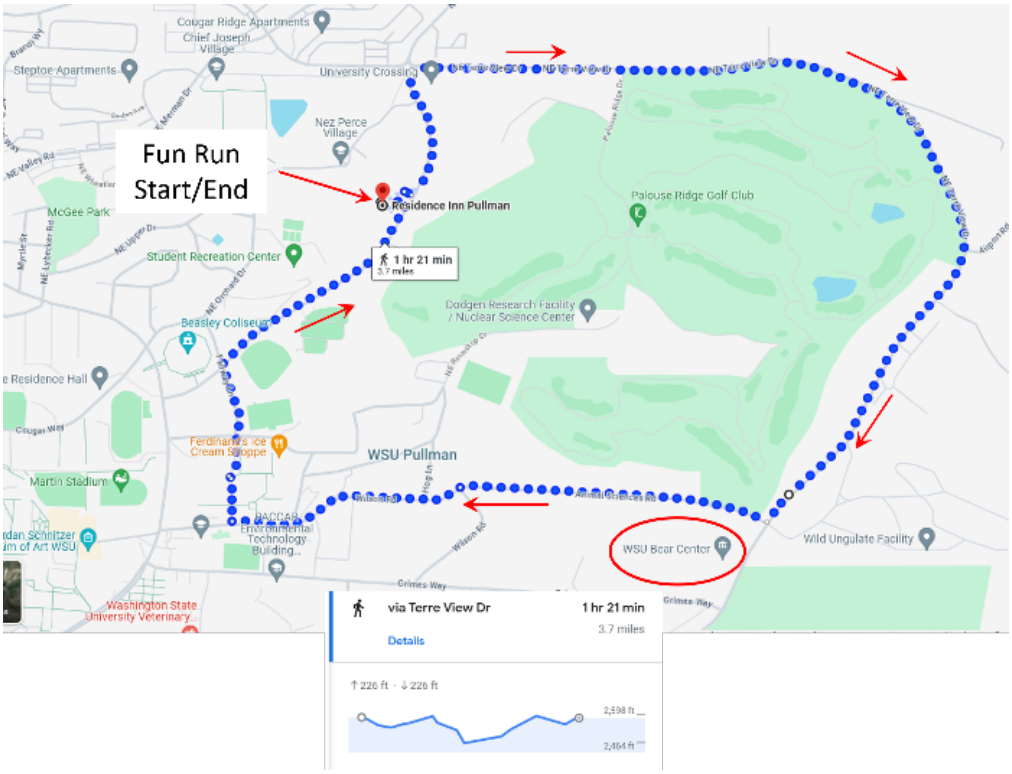
Sponsored by WSU GPSA, University of Idaho GPSA, and University of Idaho Graduate School

Following the lecture by Jorge Cham, The PhD Movie will be screened. In March 2011, Jorge Cham started filming a movie based on the comic series. The film production was a collaboration between Cham and a theater group at the California Institute of Technology.

June 25th (6:30 to 7:30 am)

Fun Run: To (not from) the Bears

Join us for a 2.6 mile roundtrip run to (not from) the Grizzly Bear Center on the WSU campus from the Compton Union Building. The WSU Bear Center is the only grizzly bear research center of its kind in the United States. Upon reaching the WSU Bear Center, the grizzly bears will be visible from a viewing area in the parking lot, where anyone can view the bears foraging or playing in the exercise yard, splashing in their pool, or lounging in their outside runs.



June 25th (9:50 to 10:20 am)

Morning Coffee and Snack Break

Sponsored by Shimadzu

Enjoy a coffee and snack break in the CUB Senior Ballroom with break sponsor Shimadzu.

June 25th (11:00 to 2:30 pm)

Academic and Employment Recruitment Fair

Prospective graduate students and chemists in search of employment should consider our Recruitment Fair, the perfect venue to connect with potential graduate schools and employers in the area at the CUB Junior Ballroom.

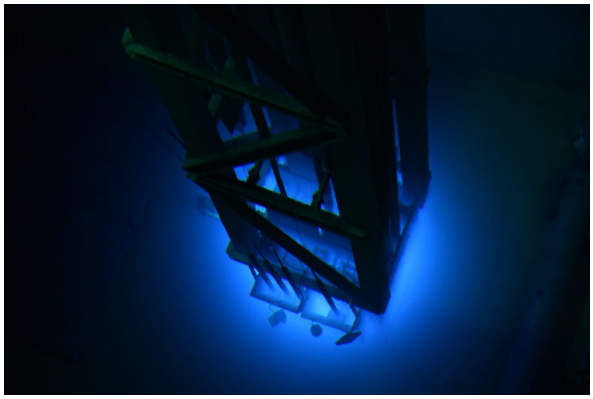
June 25th (12:00 to 1:30 pm)

Academic and Employment Recruitment Fair

Undergraduate researchers will showcase their research amongst graduate school recruiters and potential employers in the CUB Junior Ballroom.

June 25th & 26th (9:00 to 4:00 pm)

Nuclear Reactor Tours



WSU houses a 1 MW TRIGA research reactor. The WSU Nuclear Radiation Center, a WSU department within the Office of Research and located in the Dodgen Research Facility, participates in nationally and internationally pertinent research, isotope production, and various community education initiatives benefiting WSU, other university institutions, and national and worldwide clients. The department and facility are utilized by a variety of fields of study including: nuclear engineering, physics, chemistry, biology, medicine, geology, environmental sciences, archaeology, geology, and traditional and nuclear forensics. We provide laboratory space and equipment for the WSU Chemistry Department Radiochemistry Lab Sections, in addition to utilization of the reactor facility.

June 25th (2:45 to 3:30 pm)

Ice Cream Social

Sponsored by Washington-Idaho Border Section

Stop by the Expo Hall to join us for the Ice Cream Social from Ferdinand's Ice Cream Shoppe, Washington State University's gourmet ice cream shop! Grabbers and scooped ice cream featuring "Apple Cup" Crisp and Chocolate Cookie Dough will be available. Sponsored by the NORM 2024 Conference host section.

June 25th (4:40 to 5:30 pm)

Innovation to Impact (I2I) Part 1: Story of the Cosmic Crisp Apple

The Cosmic Crisp® apple demonstrates how the science of breeding and the art of imagination can work together to create an utterly new and delightful apple. Jeremy Tamsen, Director of Innovation and Commercialization for CAHNRS at WSU will give us a presentation in CUE 203 on the story of the Cosmic Crisp apple! How it takes innovation and collaboration to move things through the market.

June 25th (6:00 to 9:00 pm)

NORM 2024 Awards Dinner

The NORM 2024 Awards dinner will take place at the Pavilion of the Palouse Ridge Golf Club. Come celebrate your honored colleagues and hear a plenary talk from Simon Pimblott on “Nuclear – The Energy of Tomorrow”!

June 26th (8:00 to 9:00 am)

Senior Chemists Breakfast

Come network with senior chemists over breakfast in CUE 512.

June 26th (11:00 to 12:00 pm)

Innovation to Impact (I2I) Part 2: Fast Pitch Contest

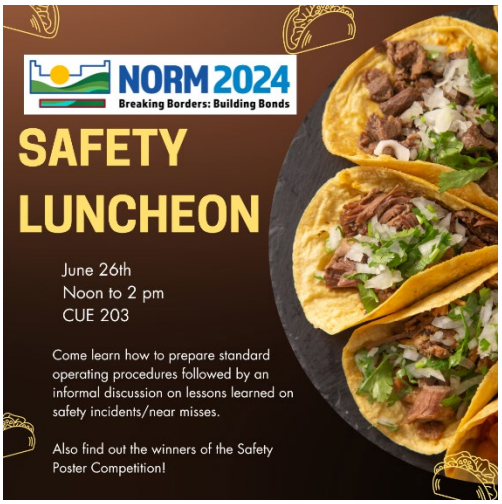
Sponsored by ACS Division of Business Development and Management and Klarquist

Come hear the pitches of teams from the Business Model Canvas Workshop in CUE 203 as a panel of experts will come in to help judge the pitches and decide if the teams are on the right track to commercialization.

June 26th (12:00 to 2:00 pm)

Safety Luncheon

Come join the Environmental Health and Safety team from the University of Idaho and Washington State University to learn the contents and how to prepare standard operating procedures followed by an informal discussion on lessons learned on safety incidents/near misses. We will also award prizes for the top three posters in the Safety Poster Competition!



June 26th (4:30 to 9:00 pm)

Crossing the Border into Idaho: Night out in Moscow, ID

Come join us for a night out in Moscow, Idaho. Starting at Colter's Creek Winery (4:30 – 7 pm) and finishing at Hunga Dunga Brewery (6:30 – 9 pm).

June 27th (7:30 to 12:00 pm)

NOR Board Meeting

The representatives of the local ACS sections of the NOR Board will meet in Troy G5 for breakfast (7:30 – 9:00 am) followed by a meeting from 9:00 am – 12:00 pm to discuss business and upcoming NORM's.

NORM 2024 Program Summary

	Sun June 22	Mon June 23			Tues June 24			Wed June 25			
Plenary Talks	**Eve**	**AM**	**PM**	**Eve**	**AM**	**PM**	**Eve**	**AM**	**PM**	**Eve**	**Plenary Talk Title**
Jose Almirall											National Science Foundation; Programs in the Chemistry Division and Beyond
Susan Ebeler											Chemistry in a Glass: The Borders and Bonds of Wine Chemistry
Jorge Cham											The Power of Procrastination
Simon Pimblott											Nuclear – The Energy of Tomorrow

	Sun June 22	Mon June 23			Tues June 24			Wed June 25		
NORM Workshops	**Eve**	**AM**	**PM**	**Eve**	**AM**	**PM**	**Eve**	**AM**	**PM**	**Eve**
I2I Part 1: Story of the Cosmic Crisp Apple										
ACS Career Workshop: Finding Yourself										
I2I Part 2: Business Model Canvas Workshop and Fast Pitch Contest										
Concept Mapping in the Science Classroom										
ACS Career Workshop: Networking										
Safety Luncheon										
ACS Career Workshop: Resume Reviews										

NORM 2024: Breaking Borders & Building Bonds: June 22nd - 27th, 2024

	Sat June 21	Sun June 22	Mon June 23			Tues June 24			Wed June 25			Thurs June 26
NORM Events	PM	Eve	AM	PM	Eve	AM	PM	Eve	AM	PM	Eve	AM
Breaking Borders: Building Bonds at the Palouse Discovery Science Center												
Reception with ACS Governance												
Main Poster Session												
Exposition												
Chemistry in a Glass Reception												
Safety Poster Competition												
Dounuts with Directors												
Building Bonds/NORM Lounge												
Technical Sessions												
Snack/Coffee Break Sponsored by ChemScene												
Pizza Lunch												
WCC Luncheon												
Afternoon Snack Sponsored by Bettersize												
WSU & University of Idaho Alumni Reception												
Screening of The PhD Movie												
Fun Run To (not From) the Bears												
WSU Nuclear Reactor Tours												
Snack/Coffee Break Sponsored by Shimadzu												
Academic & Employment Fair												
Undergraduate Poster Session												
Ice Cream Social Sponsored by WIBS												
I2I Part 1: Story of the Cosmic Crisp Apple												
NORM 2024 Awards Banquet												
Senior Chemists Breakfast												
ACS Career Workshop: Finding Yourself												
I2I Part 2: Business Model Canvas Workshop and Fast Pitch Contest												
Snack/Coffee Break												
Concept Mapping in the Science Classroom												
ACS Career Workshop: Networking												
Safety Luncheon												
ACS Career Workshop: Resume Reviews												
Crossing the Border into Moscow												
NOR Board Meeting												

NORM 2024: Breaking Borders & Building Bonds: June 22nd - 27th, 2024

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Catalysis Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Integration of Thermal Catalysis and Electrocatalysis							Jean-Sabin McEwen & Qiaowan Chang	The presence of internal and external electric fields can affect the catalytic activity and selectivity of heterogeneous catalysts. Recent advances in the synthesis, characterization, and computational modeling of catalytic materials have made measuring and predicting field influences more accessible. Consequently, field-assisted catalysis has emerged as a leading area of research in electrocatalysis. This symposium aims to foster the cross-pollination of knowledge for discovering and studying phenomena and mechanisms in thermal heterogeneous catalysis and electrocatalysis.
Breaking Borders and Building Bonds Through Catalysis							Jack Zhang	This session is dedicated to all aspects of catalysis. Homogeneous, heterogeneous, mixed, molecular catalysis, and biocatalysis. Topics can cover life sciences, electrochemistry, organometallics, photochemistry, experimental and theoretical studies, and efforts towards green catalytic processes.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Synthesis Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Creativity in Metal-Ligand Bonding							Rick Thompson	Ligands have evolved far beyond being the inert, organic ancillaries of transition metals. This session will discuss and celebrate new instances of creative ligand design including cooperativity, redox non-innocence, secondary coordination sphere interactions and more.
Breaking Borders and Building Bonds Through Synthesis							Wilson Bailey	Fundamental research in all branches, theory, or practice of organic and inorganic synthesis. Sessions will focus on broad approaches at synthesis from natural products total synthesis and transformation methodology to coordination chemistry, supramolecular chemistry, and inorganic complex design. Mechanistic studies, both experimental and theoretical should provide novel insight into the course of a chemical reaction. Multi-step synthetic methods, new strategies towards targets of interest.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Chemical Biology Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Advances in Medicinal Chemistry							Cliff Berkman	This symposium invites researchers in the medicinal chemistry and chemical biology space from academia, the pharmaceutical industry, and research institutions. The program will highlight research and development of emerging technologies spanning the spectrum from bench to bedside.
Biochemistry and Biomedicine/Cancer Biochemistry and Biology/Biomedical Engineering and Applications							Weimin Li	This session features the use of biochemistry in biological and biomedical research works at mechanistic, phenotypic, engineering, translational, and clinical levels. Research using omics, mathematical, statistical, AI/machine learning, computational or molecular modeling, and biomaterial technologies to address biological or biomedical questions are welcome to join this symposium.
Breaking Borders and Building Bonds in Chemical Biology							Travis Denton and Anjali Sharma	This symposium will utilize molecular design to probe questions for in vitro or in vivo studies. Mechanistic studies, cell biology work, toxicology, medicine and pharmacokinetics, proteins, nucleic acids, sugars, proteins, or organismic studies are welcome. Exploring cellular function from either a chemical or a biological (or both) prospective can lead to advances for many applications. Medicinal chemistry and chemical neuroscience as well as bioconjugate chemistry would apply to this symposium.
Emerging Technologies for Targeted and Controlled Drug Delivery							Anjali Sharma	This symposium is set to feature presentations by both emerging and established distinguished speakers in the realms of targeted drug delivery, biomaterials, nanotherapeutics, and nanomedicine. Additionally, discussions will cover mechanisms of nanotherapeutics, focusing on achieving target-specific delivery to enhance effectiveness while minimizing potential toxicity.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Chemistry in the Community Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Project SEED, REUs, CUREs, and Partners in Science: Engaging the Community in Research Experiences							Don Warner	This symposium spotlights programs dedicated to fostering authentic research experiences for novice researchers. It invites participants, mentors, and organizers from diverse initiatives such as those who implement course-based research experiences, Research Experiences for Undergraduates (REUs), which are typically NSF or NIH-funded summer research programs for undergraduates, Project SEED, an ACS program providing mentored research experiences for economically disadvantaged high school students, and Partners in Science, funded by the Murdock Charitable Trust, pairing high school teachers with mentors to develop relevant research skills. The symposium encourages describing specific programs and sharing stories about the benefits, successes, challenges, and lasting impacts of these programs.
Breaking Borders and Building Bonds through Chemistry in the Community							Ashley Lamm	Outreach and service in the community broadly defined.
Undergraduate Research							Paul Buckley and Jeremy Lessman	This poster session is open to undergraduates only and will occur in conjunction with the Academic Recruitment Fair.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Chemistry Away from the Bench Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
The Chemistry of Historical Archaeology							Ray von Wandruszka	Undergraduate researchers at the University of Idaho partake in a project in which they analyze and identify artifacts that are sent to the lab by museums, state institutions, other universities, and archaeology firms from all across North America. Apart from having a lot of fun with the work, students are also exposed to a wide variety of analytical techniques and the need to find the right approach for each artifact.
Computation in Molecular Sciences							Jagdish Patel and Marty Ytreberg	Join us at the "Computation in Molecular Sciences" symposium, where leading experts converge to explore the intricate realms of molecular modeling, material simulations, computational chemistry, drug design, quantum calculations, and diverse computational analyses including artificial intelligence. This symposium serves as a dynamic platform to unveil groundbreaking advancements in understanding and manipulating the complexities of chemicals, materials, and biochemical phenomena through cutting-edge computational approaches.
Computational Chemistry: From Theory to Applications							Kirk Peterson	This symposium will range from new theoretical developments in both quantum chemistry and molecular simulations to applications designed to predict or interpret experiments. Applications of computational chemistry relevant to environmental issues or energy-related areas are particularly welcome.
Advancing Chemistry through Computation and Artificial Intelligence							Ram Devanathan	Computation and artificial intelligence have a critical role in accelerating chemistry by rapidly identifying molecules with desired properties, designing new materials, illuminating reaction mechanisms, and advancing drug development. This interdisciplinary symposium will explore the latest advances in computation and the potential of large language models, machine learning, and generative artificial intelligence in the field of chemistry.
Breaking Borders and Building Bonds through Chemistry Away from the Bench							Kirk Peterson	With chemistry spreading to a multi-discipline science, many advances in chemistry do not occur in a traditional laboratory setting. This symposium welcomes contributions that advance chemistry outside of the traditional laboratory setting which may include field work, computational analysis, or even casual observations at home.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Environmental Challenges Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Engineering Solutions for Environmental Chemistry Challenges							James Moberly	This symposium will capture application driven research in environmental chemistry, sustainability focused chemistry, valorization and recycling of wastes into useful products, and similar applications toward environmental chemistry challenges.
Breaking Borders and Building Bonds Through Environmental Challenges							James Moberly	This symposium will accept contributions in the areas of complex environmental phenomena (i.e., climate change), biogeochemical cycling, bioremediation and biotechnology, data science, occurrence, fate, and behavior of aquatic or terrestrial contaminants (both on land and in air), sustainable systems, resource recovery, land use management, water research, agricultural research, chemical answers to questions in plant pathology, nematology, entomology, pest management, and crop science.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Pushing Limits of Detection Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Pushing the Boundaries of Sensitivity							Christine Gobrogge	This symposium will provide a forum to discuss the advances in instrument development and detection.
New Frontiers in Mass Spectrometry and Gas-Phase Ion Manipulation							Brian H. Clowers	Focusing broadly on techniques that exploit gas-phase ions for analytical gain, this symposium aims to present new developments, approaches, and methods using mass spectrometry and or ion mobility spectrometry. Given the wide applicability of both techniques, speakers will address both fundamental and applied aspects of these techniques.
Breaking Borders and Building Bonds at the Limits of Detection							Erin Linskey	This symposium will bring together all parts of the analytical operations of measurement science including sampling, measurements, and data analysis: New methods of sampling, emerging contaminants (i.e., PFOA/PFOS). Topics can include bioanalytical chemistry; forensics, archaeological, and medical sciences; chemometrics and data processing; mass spectrometry, microscale and nanoscale systems; electrochemistry; elemental and molecular characterization techniques and instrumentation development; sensing; separations; -omics; new directions in analysis.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Energy Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Chemical Theory and Mechanisms for Sustainable Energy Conversion and Production							Bin Liu	This symposium provides an opportunity to obtain an overview of the current status and latest progress based on mechanistic studies employing density functional theory, molecular simulations, and various synthetic, characterization tools to study waters-splitting, CO_2 conversions, and sustainable energy and fuel productions.
Biobased Materials and Products							Armando McDonald	Biobased products are materials are critical for producing sustainable products from renewable resources that helps guide us away from fossil fuels. Various feedstocks (agricultural and forestry residues, food waste, municipal waste, etc) can be used for generating these products via various processes (thermal, chemical, biological). These products have the potential for being direct replacements for synthetic products.
Unlocking a Sustainable Future: Harnessing the Power of the Hydrogen and Beyond							Haiyan Zhao and Aaron Wilson	Hydrogen is widely viewed as a key enabler of energy transition. Our symposium explores the vast potential processes and technologies for H_2, biofuels, fossil fuel mitigation, renewable natural gas, carbon capture and more. Together, let's chart a course towards a greener, more sustainable world. Your presence is key to the transformative dialogue that will shape the energy landscape of tomorrow.
Exploring the Chemistry of Next-Generation Coolants and Solvents: Radiation-Induced Chemistry							Gregory Holmbeck	Nuclear fission has been championed as a sustainable and reliable carbon-free energy source for providing baseload electricity to bridge the transition between fossil fuels and renewable energy sources. To achieve the widespread adoption of nuclear fission technologies and meet society's growing demand for safe and clean energy, multiple advanced reactor designs and fuel cycle processes are under development. Many of these new technologies envision the use of next-generation coolants and solvents, such as organic solvents, ionic liquids, and molten halide salts. To explore the utility and applicability of these new media under process conditions, a deeper molecular-level understanding of their energetics, structure, interfacial processes, and radiation-induced chemical properties is needed. This symposium will present an overview of our current knowledge and challenges in this area through invited and contributed talks from leading experts. This session will highlight new fundamental and applied research that targets understanding ionizing radiation-induced processes in complex systems that utilize next-generation coolants and solvents.
Exploring the Chemistry of Next-Generation Coolants and Solvents: Structure and Properties of Coolants, Fuels and Solvents							Ruchi Gakhar	Nuclear fission has been championed as a sustainable and reliable carbon-free energy source for providing baseload electricity to bridge the transition between fossil fuels and renewable energy sources. To achieve the widespread adoption of nuclear fission technologies and meet society's growing demand for safe and clean energy, multiple advanced reactor designs and fuel cycle processes are under development. Many of these new technologies envision the use of next-generation coolants and solvents, such as organic solvents, ionic liquids, and molten halide salts. To explore the utility and applicability of these new media under process conditions, a deeper molecular-level understanding of their energetics, structure, interfacial processes, and radiation-induced chemical properties is needed. This symposium will present an overview of our current knowledge and challenges in this area through invited and contributed talks from leading experts. This session will focus on advances in understanding the structure and dynamics of next-generation coolants and solvents, and the identification of emergent behavior for solutes (e.g., actinides and corrosion and fission products) in extreme environments.
Exploring the Chemistry of Next-Generation Coolants and Solvents: Interfacial Processes Under Extreme Environments							Simerjeet Gill	Nuclear fission has been championed as a sustainable and reliable carbon-free energy source for providing baseload electricity to bridge the transition between fossil fuels and renewable energy sources. To achieve the widespread adoption of nuclear fission technologies and meet society's growing demand for safe and clean energy, multiple advanced reactor designs and fuel cycle processes are under development. Many of these new technologies envision the use of next-generation coolants and solvents, such as organic solvents, ionic liquids, and molten halide salts. To explore the utility and applicability of these new media under process conditions, a deeper molecular-level understanding of their energetics, structure, interfacial processes, and radiation-induced chemical properties is needed. This symposium will present an overview of our current knowledge and challenges in this area through invited and contributed talks from leading experts. This session will present advances in our mechanistic knowledge of interfacial processes that underpin the molecular level properties and behavior of structural materials in extreme environments, including highly corrosive coolants and solvents, high temperature, and ionizing radiation fields.
Breaking Borders and Building Bonds through Energy							Haiyan Zhao	In particular, this symposium emphasizes mechanistic understanding of the relevant chemical processes. Detailed mechanisms depicting complex processes related to sustainable chemical and energy productions, energy conversions are instrumental to a variety of technologies that advance energy conversions, non-carbon-based fuel productions, and CO2 utilizations. In the past twenty years, we witnessed how the mechanisms established with the state-of-the-art computational, characterization, and experimentation techniques have led to the theories and principles responsible for new materials discovery and system design. Ultimately, the pace of the fuel cell, battery, and green hydrogen production revolution has accelerated.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Interfaces Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
3D Printing of Biomaterials and Drug Delivery							Susmita Bose and Amit Bandyopadhyay	This session will include presentations in the areas of (I) Processing of 3D printed biomedical devices, (ii) tissue-biomaterial interactions, (iii) in vitro and in vivo property evaluation, (iv) nanoscale surface modification and encapsulation of drugs for bone healing, (v) drug delivery from micro and nanoscale devices.
Creating and Breaking the Borders in Molecular Recognition							Gonzalo Campillo-Alvarado and Kraig Wheeler	The discovery, application, and study of non-covalent interactions and supramolecular aggregates have sparked transformative advances in materials chemistry, bridging various disciplines such as organic, inorganic, analytical, and physical chemistry. Notably, molecular recognition has revolutionized catalysis, sensing, separations, drug delivery, and the emerging fields of molecular machines and dynamic materials. This symposium provides a dynamic platform for interactive discussions and presentations on the broad scope of molecular recognition and its diverse applications. Encouraging cross-disciplinary collaborations and the exchange of innovative ideas, we invite experimental and theoretical chemists to participate, encompassing the molecular recognition of small molecules in solution, gas, and solid-state.
Interfacial Chemistry Enables Sustainable and Resilient Infrastructure Materials							Xianming Shi	This session will feature several talks that showcases how understanding and/or manipulating the chemistry at interfaces within infrastructure materials can translate to enhanced durability, environmental sustainability, and/or resilience of such materials (cementitious composites, polymeric composites, wood composites, asphaltic materials, etc.). The interfacial chemistry plays an enabling role in recent advances of infrastructure materials. The session will conclude with a roundtable discussion on how chemists and infrastructure engineers could collaborate to tackle important challenges faced by the infrastructure industry.
Electrochemistry							Frank Cheng	This symposium seeks the latest advancements in electrochemistry. Topics may include energy storage and conversion, corrosion, sensors, bioelectrochemistry, chemically modified electrodes, electrosynthesis, electrocatalysis and electrochemistry of carbon and other materials.
Structures, Kinetics, and Thermodynamics at Interfaces							Ursula Mazur	We welcome contributions regarding physio-chemical aspects of processes at soft and solid interface, such as structures, and kinetics and thermodynamics of chemical reactions, adsorption, and solvation. Basic theories intended to explain these interfacial processes and results of advanced ab initio and molecular-dynamics simulations will also be accepted.
Breaking Borders and Building Bonds at Interfaces							Jeff Bell	Interdisciplinary topics from chemists, engineers, physicists, and biologists towards interfacial discoveries and processes for applications. Materials science, biological and medical applications of materials, bioengineering, solid-state chemistry (including sol-gel chemistry) and functional inorganic devices, organic electronic devices, nanostructured materials, composites, polymers, surfaces, and the many applications. This track will also include the fabrication and processing of electronic, magnetic, or optical materials and devices.

	Sun June 22	Mon June 23		Tues June 24		Wed June 25		
Nuclear Science Track	**Eve**	**AM**	**PM**	**AM**	**PM**	**AM**	**Organizer**	**Symposium Description**
Advances in Actinide and Lanthanide Chemistry							Jim Boncella, Xiaofeng Guo, and Neil Henson	The chemistry of compounds encompassing the 5f and 4f elements. From fundamental studies of their synthesis, structure, and bonding to separations chemistry to nanoparticle chemistry.
The Nucleus, Radiation, and Chemistry Today							Alexander Chemey	This symposium will focus on all areas of nuclear chemistry, radiochemistry, radiation chemistry, and nuclear medicine.
Geochemistry and Mineralogy of Critical Metal Elements							Xiaofeng Guo, Johannes Haemmerli, Xin Zhang, and Zheming Wang	The symposium aims to establish a platform for interdisciplinary researchers from chemistry, geology, biology, computational chemistry, and materials sciences to share research on geochemistry and mineralogy of critical metals, in terms of their resources, formation and alteration, deposit mining, tailing waste, and separation/remediation. Appropriate topics include but are not limited to: Rare-earth elements mineralization and fractionation; Mineral nucleation and crystal growth mechanisms; Chemistry of hydrothermal fluids and minerals; Molecular simulations and solubility/speciation and spectroscopic studies; Fluid-driven reactive transport and thermodynamic modeling in natural systems; Waste contamination and remediation; Recycling critical metals from tailing waste.
Advancements and Training in Nuclear Materials Processing and Sensing in Harsh Environments							Sam Bryan and Neil Henson	The ability to detect small quantities of analytes from complex environments such as complex environmental solutions, nuclear reprocessing streams, and related wastes can be challenging. The work presented in this symposium will describe the development of various analytical techniques including electrochemistry, spectroscopy, separation science, and radiochemistry, that are working to resolve these challenges. This symposium is also directed at workforce development in nuclear and non-proliferation applications.
Materials in the Nuclear Fuel Cycle: From Cradle to Grave							John McCloy and Xiaofeng Guo	The proposed symposium will bring together a group of experimental and theoretical scientists focused on issues and challenges in solid state and materials chemistry raised in the nuclear fuel cycle. Appropriate topics include but are not limited to: Actinide and rare-earth elements mineralization and recovery; Accidental tolerant fuels, ceramic and metallic fuel, molten salt fuel cycle; Spent nuclear fuel and waste form dissolution, degradation, and long-term stability; Rad waste contamination and remediation; Nuclear waste geological disposal.
Breaking Borders in the Nuclear Science Enterprise							Neil Henson	This symposium will provide a forum to present recent progress in the application of nuclear science to current problems including the startup of next gen nuclear reactors, progress on cleanup at the Hanford site, developments in forensics for non-proliferation, response to unplanned radiological events, etc.

SUNDAY EVENING

3D Printing of Biomaterials and Drug Delivery

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by MEDI
A. Bandyopadhyay, S. Bose, *Organizers*

5:00 - 7:00

12. Nature meets science: Carvacrol aldehyde for bone regeneration. **A. Dahiya**, S. Bose

13. Quercetin-Zinc (II) complex loaded in 3D printed tricalcium phosphate for osteogenic and antitumorigenic treatment. **C. Toulou**

14. Indian gooseberry encapsulated liposomes for bone tissue engineering. **B. White**

15. Geometric optimization of polyvinyl alcohol microneedles for enhanced cutting performance. **A.J. Lefors**, S. Rahmani, P. Akbari, R. Chen

16. Withdrawn

17. Natural medicine release from 3D printed calcium phosphate scaffolds for bone tissue engineering. **U. Majumdar**, A. Dahiya, Y. Jo, P. Kushram, S. Bose

Advances in Actinide and Lanthanide Chemistry

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by NUCL
J. M. Boncella, X. Guo, *Organizers*
N. J. Henson, *Presiding*

5:00 - 7:00

18. Interrogating the Fe/U interface towards predictive models for environmental remediation. **B.A. Rooney-Sailand**, L.M. Moreau

19. Crystallographic and electronic structure of lanthanide-doped CeO_2 nanoparticles. **P. Jensen**

20. Investigation of thermal stabilities of mixed anion bearing Sodalites to study immobilization of radioisotopic chlorine and iodine. **K. Dahal**, S. Chong, D. Bollinger, N. Stone-Weiss, H. Zhong, B. Riley, S.P. Beckman, X. Guo, J. McCloy

Advances in Medicinal Chemistry

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by MEDI
C. E. Berkman, *Organizer*

5:00 - 7:00

21. Biocatalytic aza-Michael addition of aromatic amines to enone using α-amylase in water. **S. DUTT**

22. Optimizing procyanidin extraction from coffee pulp: A comparative study of microwave-assisted, ultrasound-assisted, and hybrid extraction methods. **M.B. Bamikale**, J.S. Cortés

23. Dimeric ATF compounds: Promising antibacterial agents. **C. Sprague**, K. Cornell

Advancing Chemistry through Computation and Artificial Intelligence

Compton Union Building
CUB Senior Ballroom (220)

R. Devanathan, *Organizer*

5:00 - 7:00

24. Authentication and contamination assessments of food products using a conformal prediction based consensus one-class classification. **H. Redd**, J.H. Kalivas

25. Computational modeling of plutonium oxide fate and transport. **M. DeSmet**, **L. Hubbard**, a. bautista, S. Muller, A. Nicholas, A. Casella, E. Buck, A. Williams, N.J. Henson, S. Miley, A. Carman

Biobased Materials and Products

Compton Union Building
CUB Senior Ballroom (220)

A. G. McDonald, *Organizer*

5:00 - 7:00

26. Investigating the effects of Alkali and Alkaline Earth Metallic (AAEM) species during biochar gasification of raw and treated samples in O_2 and H_2O mediums. **M. Arshad**

27. Influence of metakaolin and acetic acid on sodium silicate-based inorganic bonded wood composites. **A.M. Lehman-Chong**, M. Maughan, A.G. McDonald

28. Preliminary investigations on the thermal properties and flame retardancy of laccase grafted lignin micro/nanoparticles (LMNPs) on bamboo. **J. Tongco**, L. Cai

29. In situ biomineralization of metal phytates in pine wood for improved flame retardancy. **A. Farhabi**, L. Cai

30. Weathering performance of cardanol-based resin-treated wood. **L. Liang**, L. Cai, A.G. McDonald

31. Development and evaluation of an innovative mycelium-based bio-composite material for insulation applications. **E. Osei-Bonsu**, L. Cai

Biochemistry and Biomedicine/Cancer Biochemistry and Biology/Biomedical Engineering and Applications

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by MEDI
Financially supported by WSU E.S.F College of Medicine &

Office of Research
W. Li, *Organizer*

5:00 - 7:00

32. Dissecting the metabolic roles of lactate in breast cancer cell survival. **W.C. Hiscox**, W. Li

33. Investigating a potential protein-protein interaction between transcription factor PAX6 and Ribosomal Protein S20: Applications in Biochemistry and Biomedicines. **M. oladayo**, T. Kroll

34. Unveiling buried nerves with near-infrared fluorophores in fluorescence-guided surgery. **G. KUMAR**

35. Traceless phosphoryl mediated isopeptide crosslinking. **R.K. Ballard**, E. Savoy, C.E. Berkman

36. Withdrawn

37. [FeFe]-hydrogenase maturation: Refining the defined *in vitro* maturation. **A. Marlott**, B. Balci, A. Teye, A. Pagnier, E.M. Shepard, W.E. Broderick, J.B. Broderick

38. Synthesis of building blocks for novel DNA-targeting oligonucleotides. **T.J. Dohm**, **M. Rahman**, P.J. Hrdlicka

Breaking Borders and Building Bonds at Interfaces

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by COLL
J. Bell, *Organizer*

5:00 - 7:00

39. Surface chemistry and binding interactions of Lignin with Polymer-encapsulated gold nanoparticles acting as model microplastics. **O.A. AKINSOLA**, S.E. Lohse

40. Design, synthesis, and scale-up optimization of various peptide-based zwitterionic cross-linker species for incorporation into polyampholyte hydrogels. **S. Oneida**

Breaking Borders and Building Bonds in Chemical Biology

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by MEDI
T. T. Denton, A. Sharma, *Organizers*

5:00 - 7:00

41. Rapid Sensing of SARS-CoV-2 on GUITAR (pseudo-graphite). **M. Okeke**, D. Koirala, I.F. Cheng

42. Accelerated and scalable synthesis of mixed-layered glycodendrimers using copper-free click chemistry. **A. RANI**, V. Jain, A. Sharma

43. Hepatocytes-targeted silibinin nanoconjugate for the treatment of acute liver injury. **V. Jain**, A. Sharma, A. RANI

44. Targeted nanotherapy for the treatment of proliferative vitreoretinopathy. **S. GOPALAKRISHNAN**, A.I. Dar, A. RANI, K. Hsu, A. Szczesniak, M. Kelly, A. Sharma

45. Development of cannabinoid-dendrimer conjugate for efficient wound healing by localized controlled inflammation. **A.I. Dar**, A. RANI, S. Gopalakrishnan, A. Sharma

Breaking Borders and Building Bonds Through Catalysis

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by CATL
Q. Zhang, *Organizer*

5:00 - 7:00

46. Hydrogenation and dehydrogenation of N-heterocycles under Cp*Co (III)-catalysis. **P. Dahiya**, B. Sundararaju

47. Nickel-cobalt bimetallic phosphides as bifunctional electrocatalysts for electrochemical water splitting. **L. Zhu**, S. Yu, C.E. Umhey, H. Lin, J. McEwen, Q. Zhang, Y. Lin

48. Synthesis of Rh-Pd nanoparticles via neutron activation. **R.A. Adewale**, **L.M. Moreau**

Breaking Borders and Building Bonds Through Energy

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by ENFL
H. Zhao, *Organizer*

5:00 - 7:00

49. Synthesis of high aluminum content cubic ordered mesoporous silicates. **I. Joyce**, N.P. Stadie

Breaking Borders and Building Bonds Through Environmental Challenges

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by ENVR
J. Moberly, *Organizer*

5:00 - 7:00

50. Colorimetric sensor array: Rapid and sensitive approach for detecting emerging nanomaterial contaminants. **I. Ede**

51. Toxic chemicals in products: A policy approach. **S. Zigah**

Breaking Borders and Building Bonds Through Synthesis

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by CATL
W. D. Bailey, *Organizer*

5:00 - 7:00

52. Stereocontrolled synthesis of pharmaceutically pertinent 3-methylenetetrahydropyrans as potential antidiabetic agents. **I. Anosike**, T.K. Beng

53. Design, Development, and Synthesis of variable length zwitterionic crosslinkers for non-fouling polyampholyte hydrogels. **L. Dresler**, S. Oneida, K.V. Waynant

54. Synthesis of 2,*N*3-disubstituted 4(3*H*)-quinazolinones via *N*3-alkylation and C2-amination. **K. Kim**, M. Saroya, F. Gesinde

55. Withdrawn

Computational Chemistry: From Theory to Applications

Compton Union Building
CUB Senior Ballroom (220)

K. A. Peterson, *Organizer*

5:00 - 7:00

56. Relativistic ab initio calculations of the thermochemical properties of uranium oxides, sulfides, and selenides. **A. Hunt**, K.A. Peterson

57. Theory of integral and differential infinity: Applications on the atomic and nuclear scales. **D.W. Wester**

58. Molecular dynamics and docking simulations to predict inhibitors against zinc transporters (ZnT). **I. Batta**, G. Sharma

59. Direct air capture of CO_2 using amino-acid sorbents at oligomer decorated Air-aqueous interfaces. **N. Kumar**, U. Premadasa, B. Doughty, V. Bryantsev

60. Ion-ice reactions in astrochemical models. **K. Darnell**, D. Lopez-Sanders, C.N. Shingledecker

61. Synthesis and density functional theory investigation of gold deposition on silver for core-shell nanocubes with enhanced stability and sensing applications. **A. Oluwafemi**, Y. Bao, T. Kowalczyk

Creating and Breaking the Borders in Molecular Recognition

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by ANYL and COLL
G. Campillo-Alvarado, K. A. Wheeler, *Organizers*

5:00 - 7:00

62. Oriented growth of 2D metal-organic frameworks at solid-liquid interfaces. **S. Shin**, J. Tao, N. Canfield, M. Bowden, J. Heo, B. Sivakumar, L. Liu, D. Li, J. Liu, J. DeYoreo, P.K. Thallapally, M. Sushko

63. Impact of molecular shape on crystal assembly. **M. Dun**, K.A. Wheeler

64. Structural and spectroscopic characterization of Cu and Zn complexes supported by a tetradentate N_2S_2 ligand. **M. Kilker**

Electrochemistry

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by ANYL
I. F. Cheng, *Organizer*

5:00 - 7:00

65. Advancing solid electrolyte performance by protein as a dual-functional bridge for Li metal batteries. **C. Wang**, l. Ren, C. Ying, J. Liu, W. Zhong

66. Non precious metal phosphides and nitrides as HER and OER catalysts. **C. Umhey**, J. McEwen, L. Zhu, Y. Lin

Engineering Solutions for Environmental Chemistry Challenges

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by ENVR
J. Moberly, *Organizer*

5:00 - 7:00

67. Effective removal of antibiotics from aqueous solutions: Using deep eutectic solvent immobilized graphene oxide based adsorbents. **a. goyal**, E. Nashef

68. Bromine mediated tacticity modification: The effects of chemical environment and thermomechanical processing. **B. Bliss**, B. Zhao, W. Liu, J. Zhang

Integration of Thermal Catalysis and Electrocatalysis

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by CATL
Q. Chang, J. McEwen, *Organizers*

5:00 - 7:00

69. Development of High-yield Guerbet Alcohol over NiCuSn/MgAlO catalyst. **Y. Kwon**, M. Shao

70. Probing the TiO_2 surface through water and methanol adsorption. **C. Moore**, B.M. Moskowitz, J. McEwen, S. Raugei

391. Exploring the potential of electrogens in a microbial fuel cell-hydroponic system through multi omics approach. **K. Sharma**, C. Sato, S. Pradhan

Interfacial Chemistry Enables Sustainable and Resilient Infrastructure Materials

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by COLL
X. Shi, *Organizer*

5:00 - 7:00

71. Utilizing thermostable properties of GUITAR (pseudo-Graphite) for rapid and highly specific ssDNA generation. **J.A. Plascencia**, D. Koirala, I.F. Cheng

Materials in the Nuclear Fuel Cycle: From Cradle to Grave

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by NUCL
X. Guo, J. McCloy, *Organizers*

5:00 - 7:00

72. Iron sulfide nanoparticles for capturing volatile contaminants. **N. Shuvo**, J. Bussey, A.J. Lere-Adams, C. Dixon Wilkins, S. Karcher, J. McCloy

73. Molten salt synthesis of metal borides for nuclear waste forms. **E. Espinoza**, V. Augustine, A. Chemey

74. Investigation of the alkali and alkali-earth effect on crystallization of SnO_2 in LAW glasses for WTP. **A.J. Lere-Adams**, J. McCloy

75. In situ raman spectroscopy of Zr-Doped UO_2. **A. Totten**, S. Karcher, X. Guo, J. McCloy

76. 222-S Laboratory method development: Complexant analysis by high performance liquid chromatography. **T. Clauss**, E. Panisko, H. Anastos

Project SEED, REU's, and Partners in Science

Compton Union Building
CUB Senior Ballroom (220)

D. L. Warner, *Organizer*

5:00 - 7:00

77. N-Acyl homoserine lactone analogs as quorum sensing signal synthase modulators in B. japonicum. **L.B. Snow**, S. Jude, J. Abraham, M. Abrew, E.C. Brown, R. Nagarajan

Structures, Kinetics, and Thermodynamics at Interfaces

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by COLL
U. Mazur, *Organizer*

5:00 - 7:00

78. Heavy-atom tunneling in Cascade electrocyclizations in the biosynthesis of natural products. **I. Jain**, C. Castro, W.L. Karney

79. Effect of chain length on the physiochemical properties of perfluoroalkyl substances at the surface of water. **L. Jenkins**, J.D. Cyran

The Nucleus, Radiation, and Chemistry today

Compton Union Building
CUB Senior Ballroom (220)

Cosponsored by NUCL
A. Chemey, *Organizer*

5:00 - 7:00

80. Development of analysis codes for understanding element yields in nuclear fission. **L. Walker**, J. Olinger, A. Chemey

81. Design considerations for STARDUST, a nuclear fission scattering chamber. **J. Olinger**, L. Walker, A. Chemey

82. Design and building HPGe cooling array project. **J. Jaffe**, C. Jablonski, L. Walker, A. Chemey

83. D_2O box facility for higher-purity ^{135}Xe production at the Washington State University TRIGA Reactor. **M. Santillan**, C. C. Hines

MONDAY MORNING

Geochemistry and Mineralogy of Critical Metal Elements

Smith Center for Undergraduate Excellence
CUE 418

Cosponsored by NUCL
X. Guo, J. Haemmerli, Z. Wang, X. Zhang, *Organizers*

8:05 Introductory Remarks .

8:10 84. Preparation of divalent Eu materials for thermodynamic study under hydrothermal conditions. **N.S. Yaw**, Y. Cortez, A. Migdisov, X. Guo

8:30 85. Incorporation of Ni and Zn affects the redox reactivity of goethite. **S. Mergelsberg**, D. Latta, M. Scherer, B. Popejoy, E.J. Bylaska, E.S. Ilton

9:10 86. Probing lanthanide structure and speciation with optical spectroscopy. **Z. Wang**

9:30 87. Large language model-based structured information retrieval and dataset construction: examples on rare earth mineral thermodynamic properties. **J. Liu**, H. Anderson, N. Waxman, D. Biehler, H. Pulivarthy, X. Guo

9:50 Morning Coffee/Snack Break.

10:20 88. Development of an internally consistent thermodynamic database for REE minerals and crystalline solids. **C. Zhu**, R. pan, R. Virk

11:00 89. Calorimetric and structural characterization of gamma irradiated rare earth rhabdophanes. **E.C. Kindall**, S. Bang, M. Reece, X. Guo

11:20 90. Availability and trends in thermodynamic data of solid rare earth element compounds with a specific focus on carbonate phases. **M. Scharrer**, G.A. Agbanga, B.L. Brugman, M. Guild, J. Liu, X. Guo, A. Navrotsky

3D Printing of Biomaterials and Drug Delivery

Smith Center for Undergraduate Excellence
CUE 219

Cosponsored by MEDI
A. Bandyopadhyay, S. Bose, *Organizers*

8:25 Introductory Remarks.

8:30 91. Development of biomimetic functional materials using sequence-defined peptoids. **C. Chen**

9:00 92. Precision biofabrication of complex calcified tissues and engineered cancer models in-vitro and ona-chip. **L. Bertassoni**

9:30 93. 3D-printed flexible microfluidic health monitors for in-situ sweat analysis and biomarker detection. C. Chen, Y. Fu, S. Sparks, Y. Lin, D. Du, **K. Qiu**

9:50 Morning Coffee/Snack Break.

10:20 94. Lipid nanoparticle-encapsulated gingerol on 3D-printed scaffolds for orthopedic applications. **B. White**, S. Bose, V. Chaudhari

10:40 95. Morphology and photoresponsive behavior of spiropyran-conjugated poly(N-isopropylacrylamide) and polyvinyl alcohol blend cryogel. **s. rahmani**, S. Simpson, A.J. Lefors, P. Akbari, R. Chen

11:00 96. Revolutionizing bone tissue engineering with botanical biomaterials. **A. Dahiya**, S. Bose

11:20 97. 3d-printed microprecise spatiotemporal delivery system for in situ tissue engineering of multi-tissue and their interfaces. **S. Tarafder**

Advancements and Training in Nuclear Materials Processing and Sensing in Harsh Environments

Smith Center for Undergraduate Excellence
CUE 419

Cosponsored by NUCL
S. D. Branch, H. Felmy, A. French, N. J. Henson, *Presiding*

8:25 Introductory Remarks.

8:30 98. Three decades of process monitoring applications directed toward the nuclear fuel cycle. **S.A. Bryan**, A. Lines, G. Nelson, J. Bello

9:10 99. Raman spectroscopic quantification of hydrogen isotopes using chemometric models applied across multiple systems. **H. Felmy**, R. Cox, A. Espley, E. Campbell, B. Kersten, H. Lackey, S.D. Branch, S.A. Bryan, A. Lines

9:30 100. Utilizing spectroscopic on-line monitoring to study the mass balance in a simulated TALSPEAK process. **P. Tse**, N.P. Bessen, A. Espley, H. Felmy, H. Lackey, R. Rodrigues, A. Parekh, S. Potter, G. Nelson, J. Allred, G.B. Hall, B. Seiner, G.J. Lumetta, S.A. Bryan, A. Lines

9:50 Morning Coffee/Snack Break.

10:20 101. Automated control of pH for a citric acid based TALSPEAK batch extraction process using real time Raman spectroscopy: chemometric model construction. **G.L. Nelson**, S. Potter, A. Espley, T. Serrano, P. Tse, S.A. Bryan, A. Lines

10:40 102. Utilizing Raman spectroscopy for industrial control in nuclear environments. **T. Serrano**, G.L. Nelson, S. Potter, A. Espley, P. Tse, N. Bessen, H. Felmy, J. Allred, K. Ross, S.A. Bryan, A. Lines

11:00 103. Raman spectroscopy-based process monitoring for real-time control of solution pH. **A. Espley**, S. Potter, G. Nelson, T. Serrano, P. Tse, S.A. Bryan, A. Lines

11:20 104. On-line monitoring of simulated Hanford waste streams in turbulent and laminar flow conditions with dual Raman probes. **N. Boily**, A. Schafer Medina, H. Felmy, S.A. Bryan, A. Lines

11:40 105. Raman fiber optic probe development for hazardous applications. **J. Bello**

Advancing Chemistry through Computation and Artificial Intelligence

Smith Center for Undergraduate Excellence
CUE 318

R. Devanathan, *Organizer*

8:25 Introductory Remarks.

8:30 112. ChemReasoner: Heuristic search over a large language model's knowledge space using quantum-chemical feedback. **S. Choudhury**

9:10 113. FoldX free energy prediction corrections using neural networks. **J. Barnes**, J. Suresh Patel, M. Ytreberg

9:30 114. HTModel: Using natural language processing model Molecular Transformer to predict hydrotreating reactions. S.C. Eswaran, L.N. Marrlett, R. Rallo, **M.V. Olarte**

9:50 Morning Coffee/Snack Break.

10:20 115. Use of relativistic composite methods for accurate thermochemistry of actinide-containing molecules. **K.A. Peterson**

11:00 116. Enhanced models for spent fuel with machine learning. **S. Muller**, M. Dinpajooh, M. LaCount, A.M. Ritzmann

Biochemistry and Biomedicine/Cancer Biochemistry and Biology/Biomedical Engineering and Applications

Smith Center for Undergraduate Excellence
CUE 319

Cosponsored by MEDI
Financially supported by WSU E.S.F College of Medicine & Office of Research
W. Li, *Organizer*

8:25 Introductory Remarks.

8:30 117. Designing podophyllotoxin-based inhibitors to combat Guanylate Binding Protein 1 (GBP1) derived treatment resistance in ovarian cancer. **S.V. Malhotra**

8:50 118. Quantitative proteomic analysis reveals unique Hsp90 cycle-dependent client interactions. **J.L. Johnson**, E. Rios

9:10 119. Nanotechnology-enhanced biosensors for biomedical and healthcare applications. **D. Du**

9:50 Morning Coffee/Snack Break.

10:20 120. Using directed evolution and rational protein design to create biomaterials to recapitulate angiogenesis. **M.H. Hettiaratchi**, J. Svendsen, C. Asnes, M. Ford

11:00 121. Fluorescence guided surgery can improve surgical outcomes. **L.G. Wang**

11:20 122. Fatty acid efflux in capacitated sperm. **T. Chauvin**, J. McAllister, P. Gaburak, C. Heflick, A. Tanggono

Chemical Theory and Mechanisms for Sustainable Energy Conversion and Production

Smith Center for Undergraduate Excellence
CUE 409

Cosponsored by ENFL
B. Liu, *Organizer*

8:25 Introductory Remarks.

8:30 123. Protonic ceramic electrochemical cells for power generation, H_2 production and CO_2 conversion. **F. LIU**

9:10 124. Theory and modeling of Sm-doped-CeO2-supported Ni-Ru bimetallic catalyst for dry and steam reforming of methane. **H. Deng**, F. Liu, C. Duan, B. Liu

9:30 125. Designing dual-site catalyst systems aided by kinetic modeling. **B. Liu**

9:50 Morning Coffee/Snack Break.

10:30 126. Ultrafast ligand planarization in metal-organic frameworks gates charge transfer: spectroscopy-guided rational design toward efficient photocatalysis. **L. Lancaster**, T. Krueger, E. Musa, K.C. Stylianou, C. Fang

10:50 127. Enhancing photoelectrochemical performance for water splitting through graphene composite materials. **Y. . Sirina**

Creating and Breaking the Borders in Molecular Recognition

Smith Center for Undergraduate Excellence
CUE 207

Cosponsored by ANYL and COLL
G. Campillo-Alvarado, K. A. Wheeler, *Organizers*

8:25 Introductory Remarks.

8:30 128. Halogen bonding with diarylhaloniums. **D.R. Stuart**

9:10 129. Structural and spectroscopic investigation of Oxo-bridged Fe^{III} and Co^{III} clusters supported by a tripodal hydroxyl-imine ligand. **K. Seabourn**, K.A. Wheeler, S. Stoian

9:30 130. Fluorination as a supramolecular switch: Directing boron coordination vs co-crystal

formation. **S. Agarwal**, J.D. Loya, G. Campillo-Alvarado, N.Z. Lutz

9:50 Morning Coffee/Snack Break.

10:20 131. Assessing the magnetic anisotropy of a series of Co(II) complexes with N4S2 coordination. **M. Idrees**, S. Stoian

10:40 132. Molecular confinement and separation using an adamantane based supramolecular architecture. **N. Lutz**, J. Bicknell, J.D. Loya, E.W. Reinheimer, G. Campillo-Alvarado

11:00 133. Supramolecular recognition of hydrocarbons using adamantanes: Applications in chemical separations. **G. Campillo-Alvarado**

Integration of Thermal Catalysis and Electrocatalysis

Smith Center for Undergraduate Excellence
CUE 407

Cosponsored by CATL
Q. Chang, J. McEwen, *Organizers*

8:25 Introductory Remarks.

8:30 134. Tandem electrocatalysis-thermocatalysis for CO_2 conversion. **J.G. Chen**

9:10 135. Trends and descriptors for electrochemical reduction of carbon dioxide to formic acid over Sn-based catalysts. **B. Wu**, X. Han, C. Wang, H. Lin, Q. Chang

9:30 136. Elucidating the effects of coverage on the adsorption of species on La-based perovskites. **A. Whitten**, J. McEwen, E. Nikolla, R. Denecke

9:50 Morning Coffee/Snack Break.

10:20 137. Interfacial quantum electric fields. **S. Kathmann**

10:40 138. Elucidating the influence of electric fields on Fe oxidation via multiscale models. **N. Cardwell**, S.V. Lambeets, I. Onyango, Y. Wang, T. Visart de Bocarme, D. Perea, J. McEwen

11:00 139. Field-assisted N_2 activation on Ru model nanoparticle imaged by Field Ion Microscopy and Operando Atom Probe. **S. Lambeets**, M. Wirth, S. Kathmann, D. Perea

11:20 140. Enhancing hydrogen production efficiency with caustic aqueous phase electrochemical reforming (CAPER) from organic-contaminated water. **S. Ha**, B. Kee

Project SEED, REU's, and Partners in Science

Smith Center for Undergraduate Excellence
CUE 209

D. L. Warner, *Organizer, Presiding*

8:25 Introductory Remarks.

8:30 141. Coordinating the Project SEED Program in the CA section. **E.S. Yamaguchi**

8:50 142. CLICKED: Chemical learning inspired by crystallographic knowledge, experiences, and discovery. **M. Jahnke**, O.B. Berryman, D. Decato

9:10 143. Cultural and academic research experience: Increasing cultural identity in STEM among high school students. **T. Zecher**, **K. Acothley**, K. Gustatson, J. Lee, **N. Lee**

9:30 144. Development of online engineering laboratories. **J. Crepeau**

9:50 Morning Coffee/Snack Break.

10:20 145. Project SEED at the University of Southern Mississippi. **D.S. Masterson**

10:40 146. Successes and impacts of organizing the ACS Project SEED Program at a primarily undergraduate institution. **A. Mallia**

11:00 147. Snake River Project SEED Site, Part 1: Program overview. **D.L. Warner**, H. Herring, L.B. Snow, C. Sprague

11:20 148. Snake River Project SEED Site, Part 2: Student experiences. **D.L. Warner**, H. Herring, L.B. Snow, C. Sprague

11:40 Panel Discussion.

MONDAY AFTERNOON

3D Printing of Biomaterials and Drug Delivery

Smith Center for Undergraduate Excellence
CUE 219

Cosponsored by MEDI
A. Bandyopadhyay, S. Bose, *Organizers*

1:35 Introductory Remarks.

1:40 149. Advancing tissue-biomaterial interfaces: From nanostructure modification to pathological tissue integration. **I. Mitra**, M. Astudillo Potes, L. Lu, B. Elder

2:10 150. Challenges and opportunities for the additive manufacturing of materials for dental applications. **S. Khajotia**

2:40 151. 3D printed tricalcium phosphate: Polycaprolactone biocomposite functionalized with quercetin enhances osteogenic, antitumorigenic, and antibacterial properties. **C. Toulou**

3:00 Afternoon Coffee/Snack Break.

3:30 152. Advancing fracture care: 3D-printed 17-4 PH stainless steel devices. **A. Dash**, A. Bandyopadhyay

3:50 153. Carvacrol and allicin release from HA-coated Ti64 enhances in vitro and in vivo biological properties. **U. Majumdar**, S. Bose

4:10 154. 3D Printed CoCrMo-3Cu alloy with hydroxyapatite for load-bearing articulating implants. **C.L. Orozco**, L. Upadhayay, A. Dash, N. Zuchschwerdt, A. Bandyopadhyay

4:30 155. Machine learning enabled design and optimization for 3D-printing of high-fidelity presurgical organ models. E. Chen, A. Alaleh, S. Sparks, A. Deshwal, J. Doppa, **K. Qiu**

Advancements and Training in Nuclear Materials Processing and Sensing in Harsh Environments

Smith Center for Undergraduate Excellence
CUE 419

Cosponsored by NUCL

1:35 Introductory Remarks.

1:40 366. Advancing freshwater monitoring: Artificial mussels with Chelex-100 for uranium detection. **L.R. Lewis**, M.K. Murphy, A. Chemey

2:00 369. Image analysis of particulate debris laced with luminescent tracers. **L. Hubbard**, a. bautista, M. DeSmet, S. Muller, S. Milley, C. Reed, A. Nicholas, A. Williams, A. Casella, A. Carman

2:20 373. Optical spectroscopic sensor fusion on a microfluidic device for lanthanide quantification. **H. Lackey**, A. Espley, F. Lamadie, G. Nelson, M. Miguirditchian, S. Potter, S.A. Bryan, A. Lines

2:40 370. Refining luminescent tungsten oxide particles as a model tracer of plutonium oxide transport. a. bautista, **L. Hubbard**, M. DeSmet, A. Nicholas, A. Casella, E. Buck, A. Williams, N.J. Henson, S. Muller, S. Miley, A.J. Carman

3:00 Afternoon Coffee/Snack Break.

3:30 372. Exploring complex molten salt chemistry through chemimetric analysis. **S.D. Branch**, J.M. Rakos, S. Choi, H. Felmy, A. Schafer Medina, S.A. Bryan, A. Lines

3:50 368. ICP-MS/MS analyses for improved measurements in nuclear forensics. **A. French**, K. Hobbs, I. Arnquist, K. Harouaka, C.L. Beck, S. Scott

Biochemistry and Biomedicine/Cancer Biochemistry and Biology/Biomedical Engineering and Applications

Smith Center for Undergraduate Excellence
CUE 319

Cosponsored by MEDI
Financially supported by WSU E.S.F College of Medicine & Office of Research
W. Li, *Organizer*

1:35 Introductory Remarks.

1:40 156. Anticancer activity of some organoplatinum(IV) complexes. **W.A. Howard**, A. Arabi, S. Stitz, M. Cogley, A. O'Brien, D. Fabrizio, K.A. Wheeler

2:00 157. Filament assembly of human PRPP synthetase 1 stabilizes allosteric sites to regulate activity. **K. Hvorecny**, K. Hargett, J. Quispe, J. Kollman

2:20 158. Biomimetic self-powered triboelectric nano-generator integrated silicone e-skin for real-time postural feedback in amputee rehabilitation. **M. Haider**, M. Wasif

2:40 159. Predicting the effects of point mutations on the affinity of a peptide-peptide complex by molecular dynamics simulations and end-point free energy binding calculations. **G. Smith**, E.J. Sanchez, A.S. Kostyukova

3:00 Afternoon Coffee/Snack Break.

3:30 160. Sequence-unrestricted recognition of double-stranded DNA by chimeric LNA-Invader probes. **M. Everly**, P.J. Hrdlicka

3:50 161. Near infrared fluorescent probes for fluorescence guided prostatectomy. **G. Malankar**, D. Szafran, G. KUMAR, A.M. Masillati, A.R. Montaño, L.G. Wang, S.L. Gibbs

4:10 162. Modeling tumor microenvironment with native tissue matrix: structure, biology, and metabolism. **W. Li**

Breaking Borders and Building Bonds Through Catalysis

Smith Center for Undergraduate Excellence
CUE 407

Cosponsored by CATL
Q. Zhang, *Organizer*

1:35 Introductory Remarks.

1:40 163. H-D exchange of aromatic compounds using ruthenium complexes bearing PNP ligands. **N. Fisher**, D. Culver, J.M. Boncella

2:00 164. Metal-coordinated phthalocyanines as platform molecules for understanding isolated metal sites in electrochemical reduction of CO_2. **Q. Chang**, J. Lee, S. Kattel, J.G. Chen

2:40 165. Advancing click chemistry: An efficient, green one-pot synthesis of triazole derivatives using atomically dispersed copper catalysts in azide-alkyne reactions under mild conditions. **A. Auni**, Q. Zhang

3:00 Afternoon Coffee/Snack Break.

3:30 166. Developing a scalable catalytic process for the cyclization and dehydrogenation of botanical cannabidiol to form cannabinol. **R. Jensen**

3:50 167. Boosting photocatalytic hydrogen production by MOF-derived metal oxide heterojunctions achieving a 10.0% apparent quantum yield. **E.N. Musa**

4:10 168. Breaking borders: The creation and catalytic innovations of hierarchical porous UiO-66 MOFs. **Q. Zhang**

Breaking Borders and Building Bonds Through Chemistry in the Community

Smith Center for Undergraduate Excellence
CUE 209

A. N. Lamm, *Organizer*

1:35 Introductory Remarks.

1:40 1. Chemistry outreach in South Sound region: Engaging activities for K-12 students. **S. Arungundram**, **A. Hoffman**

2:00 2. Chemistry outreach at Eastern Washington University. **A.N. Lamm**

2:20 3. Aromatic potential of hop polyfunctional thiols. **C. Chenot**, S. Collin

Computation in Molecular Sciences

Smith Center for Undergraduate Excellence
CUE 318

J. Patel, M. Ytreberg, *Organizers*

1:35 Introductory Remarks.

1:40 169. Use of structure-guided drug discovery for development of novel antibacterial medicines. **A. Baylink**

2:20 170. Exploring the ability of the MD+FoldX method to predict SARS-CoV-2 antibody escape mutations using large-scale data. **L. Chi Uluac**, J. Barnes, J. Suresh Patel, M. Ytreberg

2:40 171. Using structure prediction to predict mechanisms and families in *S. cerevisiae* Killer toxins. **J. Creagh-Grave**

3:00 Afternoon Coffee/Snack Break.

3:30 172. Unleashed from constrained optimization: Quantum computing for quantum chemistry employing generator coordinate method. **B. Peng**

3:50 173. Visual languages in VR to explore chemical spaces. **J. Peper**, J.H. Kalivas

4:10 174. The MifS/MifR signal transduction system links central metabolism with virulence in Pseudomonas aeruginosa. **Z. Sarwar**

Interfacial Chemistry Enables Sustainable and Resilient Infrastructure Materials

Smith Center for Undergraduate Excellence
CUE 207

Cosponsored by COLL
X. Shi, *Organizer*

1:35 Introductory Remarks.

1:40 175. Application of polyvinyl alcohol (PVA) polymer to produce Zn-hydrogel anode in providing cathodic protection for rebars in salt-contaminated concrete. Z. Zhou, **X. Shi**

2:00 176. Interfacial bond strength of nanoclay-modified epoxy resin for CFRP-mortar composites. **A. Ali Shahmansouri**, X. Shi

2:20 177. Cost-effective and durable concrete with nano-modified aggregates pretreated by graphene oxide. **J. He**, X. Shi

3:00 Afternoon Coffee/Snack Break.

3:30 178. Catalyst-free, degradable, amine cured epoxy network vitrimer: Robust mechanical performance, 100% hydrothermal recyclability in pure water. **L. Shao**, J. Zhang

3:50 179. Micro-/nano-engineered epoxy-coated rebar to increase concrete durability in harsh environments: anticorrosion and bond performances. **A. Mahmoodigahrouei**, X. Shi

4:10 180. Recycled mask polypropylene microfibers benefit tensile properties and prevent

thermally induced spalling of high-strength engineered cementitious composite. **X. Shi**, Z. Zhang

The Nucleus, Radiation, and Chemistry Today

Smith Center for Undergraduate Excellence
CUE 418

Cosponsored by NUCL
A. Chemey, *Organizer*

1:35 Introductory Remarks.

1:40 181. Nuclear chemistry: An essential nuclear science. **A. Chemey**

2:00 182. Unveiling the chemistry of superheavy elements: insights and challenges. **J.M. Gates**

2:40 183. Use of mixed resin system for separation of actinides and long-lived fission products. **C. Allen**, S. Herman, E. Arnold, A. French, C.L. Beck

3:00 Afternoon Coffee/Snack Break.

3:30 185. Investigation of candidates for reactor produced radioactive materials in support of radiological training exercises. **Z.M. Heiden**, C.C. Hines, N.R. Mann

3:50 186. Overview of fusion commercialization in the pacific NW. **C. Keane**

4:10 184. Future mass measurement capabilities at Berkeley Lab's FIONA. **R. Orford**

Unlocking a Sustainable Future: Harnessing the Power of the Hydrogen and Beyond

Smith Center for Undergraduate Excellence
CUE 409

Cosponsored by ENFL
A. Wilson, H. Zhao, *Organizers*

1:35 Introductory Remarks.

1:40 187. Advanced solid oxide electrolysis cell (SOEC) technology for H2 production at Idaho National Laboratory. **D. Ding**

2:20 188. Synergizing direct air capture and utilization of CO2 for energy system decarbonization. **H. Lin**, C. Wang, Z. Dong

3:00 Afternoon Coffee/Snack Break.

3:30 189. [FeFe]-Hydrogenase maturation: DTMA ligand biosynthesis and the role of HydF maturase. **B. Balci**, R. O'Neill, A. Marlott, E.M. Shepard, h. yang, A. Pagnier, M.T. Mock, B.M. Hoffman, W.E. Broderick, J.B. Broderick

3:50 190. $SrIrO_3$ as efficient electrocatalysts for hydrogen production in proton exchange membrane electrolyzer. **Z. Feng**

4:30 191. Effect of a-site deficiency on the performance of PrNi0.7Co0.3O3-δ perovskite materials for protonic ceramic electrochemical cells. **H. Zhao**, D. Ding, W. Bian, T. Li

TUESDAY MORNING

Advances in Actinide and Lanthanide Chemistry

Smith Center for Undergraduate Excellence
CUE 419

Cosponsored by NUCL
J. M. Boncella, X. Guo, N. J. Henson, *Presiding*

8:25 Introductory Remarks.

8:30 192. Elucidating the growth pathways and periodic trends of actinide oxide nanoparticle formation. **W. Vance**

8:50 193. Solvent directed anisotropic growth of uranium dioxide nanoparticles. **C. Wentzell**

9:10 194. Solid state ^{59}Co NMR study of a high-valent Np complex: : $[Co(NH_3)_6]_3[NpO_4(OH)_2]_3.nH_2O$. **K. ANAND**, K. Rana, S. Park, S.I. Sinkov, G.C. benthin, H. Rajapaksha, T. Forbes, H. Cho

9:30 195. Reactivity of actinide complexes supported by meso-$[ONO]^{2-}$, products arising from a template synthesis. **A.M. Tondreau**

9:50 Morning Coffee/Snack Break.

10:20 196. Synthesis of a trivalent uranium Monoimido and the role of potassium intercalation in stabilizing this reactive moiety. **E.D. Reinhart**, C. Studvick, B. Billow, J.M. Boncella, I.A. Popov, A.L. Odom

10:40 197. Stabilizing low-valent organouranium complexes using bulky terphenyl amido ligands. **V. Groner**, E.D. Reinhart, J.M. Boncella

11:00 198. Investigating the formation and reactivity of Zr^{II}, Hf^{II}, and An^{II} species supported by metal-arene interactions. **I. Haltom**, J.M. Boncella, E. Reinhart

11:20 199. Stabilization of high- and low-valent f-element complexes: Computational rationale. **I.A. Popov**, J.M. Boncella, H.S. La Pierre, B. Vlaisavljevich, A.M. Tondreau, E.D. Reinhart, P. Yang, E.R. Batista

Advances in Medicinal Chemistry

Smith Center for Undergraduate Excellence
CUE 319

Cosponsored by MEDI
C. E. Berkman, *Organizer*

8:25 Introductory Remarks.

8:30 206. An efficient synthesis of C-6 aminated 3-bromoimidazo[1,2-b]pyridazines. **T. Iorkula Hange**, B. Tolman, S. Burt, M. Peterson

8:50 207. An isoxazole conformational scan: towards bioisosteric replacement in design of PDZ domain inhibitors. **C.A. Gates**, N.R. Natale

9:10 208. Inhibition of oxytosis/ferroptosis as a tool for identifying neuroprotective phytocannabinoids. **R. Jensen**, P. Maher

9:30 209. The natural products magnetic resonance database (NP-MRD): comprehensive resource for NMR data enabling natural products discovery and understanding. **J.R. Cort**

Biobased Materials and Products

Smith Center for Undergraduate Excellence
CUE 416

A. G. McDonald, *Organizer*

8:25 Introductory Remarks.

8:30 210. Development of wood fiber reinforced biodegradable PHB-based toughening materials. Z. Chen, **H. Li**

8:50 211. Carbonized hemp fiber for use in composites materials. **S.B. Yusuf**, A.G. McDonald

9:10 212. Solvent-assisted plastic recovery from mixed municipal solid waste. **H. Appiah**, A.G. McDonald, J. Klinger, E.B. Ziv

9:30 213. Biobased novolac composites: Flow, curing, and mechanical properties. **J. Kukal**, A.G. McDonald, L. Portilla, B. Via, S. Adhikari

9:50 Morning Coffee/Snack Break.

10:20 214. Preparation and characterization of lignin-polybutylene-succinate copolymers. **N. Ewurum**, A.G. McDonald

10:40 215. Enhancement of rheology and thermal stability of PHBV fed fermented dairy manure blended with polylactic acid by *in-situ* reactive extrusion. **M. Abbasi**, A.G. McDonald

11:00 216. Wood protection properties of Zinc Oxide-based Cement complex from Clove oil and wood pyrolysis oil. **C. Alorbu**, A.G. McDonald, L. Cai

11:20 217. Artificial weathering performance of wood coated with bio-oils. **D. Willard**, L. Cai, A.G. McDonald

11:40 218. Thermoforming natural fiber prepregs into laminated structures. **A. Chanda**, M.B. Bakri, V. Yadama

Electrochemistry

Cosponsored by ANYL
I. F. Cheng, *Organizer*

Smith Center for Undergraduate Excellence
CUE 207

8:25 Introductory Remarks.

8:30 219. Exploring the lower limit of electrorefining. **J.H. Manner**, M. Stoddard, D. Rappleye

8:50 220. GUITAR: A highly modifiable carbon thin film for catalytic applications. **F. Dalbec**, D. Koirala, J.A. Plascencia, I.F. Cheng

9:10 221. Soy protein-enhanced cathode with graphene coating for high-performance Li-S batteries. **Y. Guo**, C. Ying, l. Ren, C. Wang, J. Liu, W. Zhong

9:30 222. Corn protein-functionalized separator for trapping polysulfides and regulating ion transport in Li-S batteries. **L. Ren**, C. Wang, Y. Guo, J. Liu, W. Zhong

9:50 Morning Coffee/Snack Break.

10:20 223. Single-atom catalysts for enhanced electrochemical applications: Fuel cells and CO2 conversion. **Y. Lin**

10:40 224. Chemical and radiation effects from Hanford tank waste on long-term performance of Ag/AgCl reference electrodes for in-tank corrosion potential monitoring. **S.X. Feng**, D. Frye

11:00 225. Exploration of chemical and thermal stability of c-LLZO using in situ Raman microscopy. **S.T. Montoya**, S. Shanto, R.A. Walker

11:20 226. Economical Zr & Ti electroplating at low-throughput commercial scales. **C. Arendt**, **L. Hubbard**, K. Grubel, C. Chancellor, S. Livers, B. Lawler, M. di Vacri

Exploring the Chemistry of Next-Generation Coolants and Solvents: Interfacial Processes Under Extreme Environments

Smith Center for Undergraduate Excellence
CUE 409

Cosponsored by ENFL and NUCL
S. Gill, *Organizer*

8:25 Introductory Remarks.

8:30 227. Disentangling simultaneous effects of corrosion and irradiation of structural materials in molten salts and liquid metals. **M.P. Short**, A. Peterkin, W. Zhou, W. Cairang, K. Woller, Y. Yang, A. Minor, R. Moeykens, G. Zheng

9:00 228. Strategies for characterizing the impact of fission environmental factors on the interfacial molten salt corrosion mechanisms of Ni-based reactor structural materials. **T. Copeland-Johnson**, X. Quintana, I. Han, F. Teng, M.E. Woods, R. Gakhar, D. Murray, G. Cao, G. Holmbeck, S. Gill, J. Tucker, L. He

9:20 229. Chloride-induced stress corrosion cracking in stainless steels: Mechanisms and mitigation. **J. Wharry**, H.J. Qu

9:50 Morning Coffee/Snack Break.

10:20 230. Perspectives on the interfacial interactions between U-Zr fuel and cladding. **M. Okuniewski**, N. Rodríguez Pérez, J. Thomas, M. Smith, A. Figueroa Bengoa

10:50 231. Fission products, actinides, and other things that are depositing, diffusing, and plating onto materials in molten salt systems. **S.S. Raiman**

Materials in the Nuclear Fuel Cycle: From Cradle to Grave

Smith Center for Undergraduate Excellence
CUE 418

Cosponsored by NUCL
X. Guo, J. McCloy, *Organizers*

8:25 Introductory Remarks.

8:30 237. Ab initio molecular dynamics informed EXAFS of some F-block elements associated with ancient and synthetic Fe oxides. **E.S. Ilton**, S. Mergelsberg, E.J. Bylaska, J.G. Catalano

9:10 232. Thermal expansion of uranium mononitride. **N.S. Yaw**, E. Kindall, A. van Veelen, S. Karcher, B. Merrill, C. Dixon Wilkins, G. King, j. white, J. McCloy, X. Guo

9:30 235. Analysis of the structural polymorphism of thorutite, $ThTi_2O_6$, and related materials. **M.C. Dixon Wilkins**, N.S. Yaw, X. Guo, J. McCloy, N.C. Hyatt

9:50 Morning Coffee/Snack Break.

10:20 238. Leach test diffusivity parameters accuracy for cementitious waste forms models. **A. Fujii Yamagata**, R. Skeen, G. Smith, R.M. Asmussen

10:40 236. Dissolution of doped UO_2 using single pass flow through studies. **S. Asmussen**, R.M. Asmussen, A.P. Goulet, R.W. Shimskey, B.D. Hanson

11:00 . The xenon-metal pair formation in UO2: A DFT+U study. **L. Malakkal**, S. Zhou, V. Prithivirajan, C. Howard, D. Yushu, L. He, S. Biswas

11:20 234. Thermal conductivity of nuclear fuels and materials, before and after irradiation. **Z. Hua**, A. Khanolkar, C. Dennett, K. Gofryk, M. Manley, M. Khafizov, D. Hurley

11:40 . Initial results in molten salt synthesis of f-element nitrides. **V. Augustine**, E.A. Espinoza, S. Parker, A. Chemey

Pushing the Boundaries of Sensitivity

Smith Center for Undergraduate Excellence
CUE 209

Cosponsored by ANYL
Financially supported by Shimadzu
C. Gobrogge, *Organizer*

8:25 Introductory Remarks.

8:30 247. Building a better microscope for imaging mass spectrometry sensitivity. **B.**

Bogdanov, **B. Feild**, C.A. Gobrogge

8:50 248. Sensitive measurement of steroids, small molecules, and peptides by LC-MS/MS. **D.W. Erikson**

9:10 249. PFAS trailhead: A path to testing. **D. Gruszecka**

9:30 250. PFAS - They are here, now what?. **E.T. Linskey**

Structures, Kinetics, and Thermodynamics at Interfaces

Smith Center for Undergraduate Excellence
CUE 219

Cosponsored by COLL
U. Mazur, *Organizer*
J. A. Brozik, *Presiding*

8:25 Introductory Remarks.

8:30 251. Stochastic interactions of long- and short-form aquaporin-4 in supported lipid bilayers. **J.A. Brozik**, J.D. Carder, B. Barile, K. Shisler, F. Pisani, A. Frigeri, K. Hipps, G. Nicchia

9:10 252. Thermal effusivity measurement using modulated temperture differential scanning calorimetry. **R. Blaine**

9:30 253. Functionalized Liquid-Solid Interfaces for Ion Separations. **G.E. Johnson**

9:50 Morning Coffee/Snack Break.

10:20 254. Imaging kinetics and ion uptake in organic mixed ionic-electronic conductors. **R. Giridharagopal**, D.S. Ginger

11:00 255. Photophysics and chemistry of group XIV rhodamines. **F. Abounorinejad**, E.L. Taylor, E.P. Jacobo, J.A. Brozik

11:20 256. Withdrawn

The Chemistry of Historical Archaeology

Smith Center for Undergraduate Excellence
CUE 318

R. Von Wandruszka, *Organizer*

8:25 Introductory Remarks.

8:30 262. Analytical chemistry in historical archaeology. **R. Von Wandruszka**

8:50 263. From yellow powder to black powder: An archaeochemical journey. **M. LaFleur**, R. Von Wandruszka

9:10 264. Arsenic for health and beauty. **C. Qualls**, R. Von Wandruszka

9:30 265. Snake oils and witch bottles in our past. **E. Wilcoxson**, R. Von Wandruszka

9:50 Morning Coffee/Snack Break.

10:20 266. Historical laxatives. **C. Young**, R. Von Wandruszka

10:40 267. Chemical sleuthing in historical archaeology. **R. Von Wandruszka**, M. Moody

11:00 268. Digging chemistry. **A. Hoffman**

Breaking Borders and Building Bonds in Chemical Biology

Smith Center for Undergraduate Excellence
CUE 319

Cosponsored by MEDI
T. T. Denton, A. Sharma, *Organizers*

10:20 Introductory Remarks.

10:25 269. Characterisation of phospholamban phosphorylation in response to β1-adrenoceptor stimulation in cardiac H9C2 myocytes. **N.U. Anyiam**

10:45 270. Design and synthesis of a platelet activating factor activity-based probe. **J. Kroll**, D. Kim, V. Lin

11:05 271. Investigating lncRNA structure and dynamics with single-molecule fluorescence microscopy. **K. Pai**, J.R. Widom

11:25 272. Sequence-unrestricted DNA-targeting using Invader probes. **P.J. Hrdlicka**

11:45 273. Pre-clinical evaluation of phosphonate analogues of lanthionine ketenamine as potential therapies for neurological disorders. **T.T. Denton**

TUESDAY AFTERNOON

Undergraduate Research

Compton Union Building
CUB Junior Ballroom (210)

P. Buckley, J. Lessmann, *Organizers*

12:00 - 1:30

280. Zeolite catalyzed Friedel-Crafts acylations. J. Tzompa, **A. Hayden**, **S. Call**, I. Marshall, L.A. Nickerson

281. Green synthesis of MOF materials. **K. Younce**, F. Hou

282. Synthesis and characterization of ruthenium pincer complexes. **J. Carrell**, N. Fisher, J.M. Boncella

283. Pulsed source ion mobility spectrometry. **L. Vyhmeister**, S. Gharari, A. Robb, B. Clowers, E. Davis

284. Synthetic preparation of modified compounds for fluorescent click labeling of cysteinylated tRNA. **T. Le**, L.A. Nickerson, C.M. Evilia

285. Maximizing with MOF catalysts: Testing for optimal yield conditions of one-step phenol synthesis. **Z. Irvine**, F. Hou

286. Improved solid phase extraction method for quantifying thiamine in fish tissues. **E. Boyd-Tucker**, L.A. Hoferkamp, C. Pinger

287. Incorporation of transition metals into CeO2 and UO2. **M. Lauby**, P. Jensen, S. Scheel, L.M. Moreau

288. Interanionic interactions in aluimno-boro-silicate nuclear waste glasses. **J. Bussey**, A. Azeddioui, N. Smith-Gray, N. Stone-Weiss, D. Neuville, S. Karcher, C. Dixon Wilkins, J. McCloy

289. CuCo catalysts derived from decomposed CuCo-MOF materials for selective CO_2 hydrogenation to methanol. **B. Li**, C. Wang, H. Lin

290. Deciphering LARP6-mediated collagen mRNA stability via FRET: implications for targeted fibroproliferative disease therapies. **H. Herring**, E. Baggs, L. Warner

291. Increasing the safety of irradiated samples with nitrogen. **L. Lumzer**, Z.M. Heiden

292. Investigating the trace metal analysis in Sharpie markers. **A. Smith**, **E. Irish**, Z.M. Heiden

293. PSMA-targeted dendrimer nanomedicine for prostate cancer. **K.J. Goody**

294. Protic NNN pincer complexes as homogeneous CO_2 reduction catalysts. **S.G. von Fuchs**, J. Smith, S. Dillinger, W.D. Bailey

295. Investigation of lewis acid catalysts to aid the synthesis of substituted chalcones. **H.M. Gray**, L. Wang, W.D. Bailey

296. Hydrolysis kinetics of trimeric Benzodiazaborole. **M.A. Lamb**

297. Salmonella and the microbiome: How metabolism plays a role in competition. **S. Diaz De Leon**, A. Baylink

298. Pulsed electrospray ionization kinetics. **G. Valdez**, L. Vyhmeister, R. Mcrae, T. Masiello, E. Davis

299. Synthesis and Reactivity of Zr, Hf, Th, and U Complexes. **M. Litwin**, J.M. Boncella

300. Scandium dissolution in alkaline carbonate media. **O. Bahhage**, X. Guo

301. Investigation of trace metals in packaging materials for nuclear reactor irradiations. **M. McCloy**, **G. McCloy**, Z.M. Heiden

302. Advancing molten salt reactor technology. **B. Iyer**, X. Guo

Breaking Borders and Building Bonds Through Environmental Challenges

Smith Center for Undergraduate Excellence
CUE 207

Cosponsored by ENVR
J. Moberly, *Organizer*

1:35 Introductory Remarks.

1:40 307. High-valent metal species in water splitting and abatement of micropollutants in water. **V.K. Sharma**

2:00 308. Withdrawn

2:20 309. Towards optimizing biobeads for improved bioremediation of trichloroethylene. **C. Silsby**, J. Moberly

Computational Chemistry: From Theory to Applications

Smith Center for Undergraduate Excellence
CUE 318

K. A. Peterson, *Organizer*

1:35 Introductory Remarks.

1:40 310. The many-body expansion in science. **S. Xantheas**

2:20 311. Consequences of the Kirkwood transition: from separations to sludge. **G.K. Schenter**

2:40 312. Exploring the chemical behavior of water within enzymes using spatial and electrostatic computation. **C. Sindic**, P.R. Callis

3:00 Ice Cream Social.

3:30 313. Simulating excited states and interlayer coupling for photoactive and electroactive covalent organic framework design. T. Leo, N. Kanlayakan, M. Robbins, A. Sullivan, H. Abbay, H. Thornes, G. Fitzsimmons, A. Goodey, **T. Kowalczyk**

3:50 314. Over-destabilization vs. over-stabilization in theoretical analysis of f-orbital covalency. **X. Li**

4:30 315. Application of auxiliary field quantum Monte Carlo to actinide thermochemistry. **B. Bonar**

Creativity in Metal-Ligand Bonding

Smith Center for Undergraduate Excellence
CUE 416

R. R. Thompson, *Organizer*

1:35 Introductory Remarks.

1:40 4. Recent development in the evolution of pop-based ligands for the construction of electrophilic transition metal systems. **E.B. Hulley**, K. Chavez

2:00 5. Engineering a new stable and luminescent zirconium metal-organic framework using a lowered-symmetry tetraphenylethene-based ligand, meta-ETTC. **H. Johnson**, E.S. Garcia, M. Ebberson, Q. Zhang

2:20 6. Synthesis of Azothioformamide and Azoformamide ligands: Application from coordination to catalysis and biological activity. **L. Tiwari**, K.V. Waynant, K. Cornell

2:40 7. Designing ligands for metal dissolution. **K.V. Waynant**, J. Moberly, M.F. Roll, L. Tiwari, R. pradhan, M. Moody

3:00 Ice Cream Social.

3:30 8. Diverse reactivity of a nickel-phosphaethynolate. **R.R. Thompson**, D. Powers, O. Gutierrez

3:50 9. Sequential pore functionalization of metal-organic framework for carbon dioxide capture. **A. Yadav**, K.C. Stylianou

4:10 10. Synthesis, characterization, and reactivity of thioether-supported amido complexes of iron and cobalt. **R.D. ONeill**, C. Pollock, M. Mosquera, M.T. Mock

4:30 11. High-valent mononuclear nickel complexes: From C-H bond activation to water splitting catalysis. **D. Wang**, Y. Kwon, C. Bruner

Emerging Technologies for Targeted and Controlled Drug Delivery

Smith Center for Undergraduate Excellence
CUE 319

Cosponsored by MEDI
A. Sharma, *Organizer*

1:35 Introductory Remarks.

1:40 316. 2-Deoxy glucose surfaced mixed layer dendrimer-based non-invasive neuron-targeted drug delivery system. **A. Dhull**, Z. Zhang, A. Sharma, R. Sharma

2:00 317. Modular SMART molecules for targeted drug delivery. **E. Savoy**, F.P. Olatunji, R.K. Ballard, C. Lovingier, M. Fulton, C.E. Berkman

2:20 318. Hydrogels and micellar structures for controlled drug delivery and as liquid embolics. **H. Ghandehari**

3:00 Ice Cream Social.

3:30 319. Dynamic borders: A study of interfacial phenomena in lipid nanoparticle systems. **Y. Eygeris**, G. Sahay

3:50 320. Re-discovering tumor-targeted glutamine antagonists using prodrug paradigms. **R. Rais**

Exploring the Chemistry of Next-Generation Coolants and Solvents: Radiation-Induced Chemistry

Smith Center for Undergraduate Excellence
CUE 409

Cosponsored by ENFL and NUCL
G. Holmbeck, *Organizer*

1:35 Introductory Remarks.

1:35 321. Influence of proton irradiation on the corrosivity of molten fluoride salt. **W. Zhou**, A. Peterkin, R. Moeykens, K. Woller, M.P. Short, G. Zheng, Y. Yang

2:00 322. Understanding the effects of gamma radiation on the chemical and physical characteristics of a potential candidate for organic cooled reactors. **A. Vasquez**, A. Seshadri, K. Shirvan, J. Buongiorno

2:30 323. Radiation-induced transients in solid and molten Li and K iodides. **A. Ramos Ballesteros**, G. Holmbeck, R. Gakhar, M.E. Woods, J.K. Conrad

3:00 Ice Cream Social.

3:30 324. Dynamics and reactivity of electrons in aliphatic ionic liquids. **C. Huber**, A.T. Healy, J.F. Wishart, D.A. Blank

3:55 325. Investigating the impacts of used nuclear fuel direct dissolution of on the radiolytic longevity of solvent and butyramide extractants. **S.P. Mezyk**, A. Dang, A. Kynman, G. Holmbeck

Advances in Actinide and Lanthanide Chemistry

Smith Center for Undergraduate Excellence
CUE 419

Cosponsored by NUCL

1:55 Introductory Remarks.

2:00 367. Towards a molecular-based understanding of extraction with Diamyl amyl phosphonate. **M. Dinpajooh**, R. Overstreet, A.M. Ritzmann, L.A. Metz, N. Uhnak

2:20 371. Bonding, reactivity, and mechanisms of stabilization of low valent uranium-arene complexes: a computational rationale. **C. Studvick**, E. Reinhart, A.M. Tondreau, B. Billow, A.L. Odom, J.M. Boncella, I.A. Popov

2:40 375. ^{79}Br and ^{81}Br Nuclear Quadrupole resonance study of the electronic structure and bonding in $Cs_2UO_2Br_4$. S. Park, **K. Rana**, K. ANAND, R.G. Surbella, S.I. Sinkov, H. Cho

3:00 Ice Cream Social.

3:30 376. Mausolates: large-cavity chelates for lanthanide and heavy metal ion binding. J.F. Smart, A.J. Ackroyd, A.T. Gogoulis, L. Gajecki, A.G. Oliver, J.S. McIndoe, **D.J. Berg**

3:50 377. Calculation of reaction rate for dinitrogen pentaoxide using ab initio molecular dynamics. **M. LaCount**, N.J. Henson, A.M. Ritzmann

4:10 379. Uranyl uptake into metal–organic frameworks: A detailed X-ray structural analysis. **M.P. Heaney**, H. Johnson, J.G. Knapp, S. Bang, S. Seifert, N.S. Yaw, J. Li, O.K. Farha, Q. Zhang, L.M. Moreau

4:30 XXX. Exploring Actinide Optical Properties through Extended Frameworks. **R. G. Surbella III**, A. Arteaga, and A. Nicholas

Breaking Borders and Building Bonds Through Energy

Smith Center for Undergraduate Excellence
CUE 407

Cosponsored by ENFL
H. Zhao, *Organizer*

1:55 Introductory Remarks.

2:00 303. Particle-size mixing as a route to high stability all-silicon electrodes for lithium-ion batteries with a liquid electrolyte. V. Joshi, W. Xu, **N.P. Stadie**

2:40 304. New double perovskite materials and their suitability for high temperature energy conversion applications. **B. Samuel**, J. Esakoff, S. Sofie, R.A. Walker

3:00 Ice Cream Social.

3:50 305. Unveiling conduction mechanism in lithium-doped high-entropy oxides for extreme-condition energy storage. **H. Zhang**, M. Song, X. Zhang, S. Wan, G. Wang, J. Liu, W. Li, H. Dong, C. Lou, Z. Chen, B. Chen

4:10 306. Pseudocapacitive lithiation of hexabenzocoronene and pyrolyzed derivatives. **C. McDaniel**, D. McGlamery, N.P. Stadie

Materials in the Nuclear Fuel Cycle: From Cradle to Grave

Smith Center for Undergraduate Excellence
CUE 418

Cosponsored by NUCL

1:55 Introductory Remarks.

2:00 . In-situ X-ray diffraction and Raman spectroscopy of $(Zr_{0.1}U_{0.9})O_2$ and $(Zr_{0.2}U_{0.8})O_2$. **S. Karcher**, S. Bang, C. Dixon Wilkins, N.S. Yaw, B. Merrill, A. Totten, X. Guo, J. McCloy

2:20 . The destiny of water in uranium dioxide nanoparticle synthesis for the production of nanoscale U/Th MOX fuel. **M.P. Heaney**, L.M. Moreau

2:40 387. In situ high-temperature X-ray diffraction and X-ray fine structure analyses of UO2: probing the dopant effect on thermal expansion and disorder. **J. Liu**, S. Bang, A. van Veelen, j. white, N. Dacheux, X. Guo

3:00 Ice Cream Social.

3:30 388. Thermal oxidation and high temperature structures of uranium carbide: in situ X-ray diffraction studies. **E.C. Kindall**, N.S. Yaw, J. Liu, C. Dixon Wilkins, S. Karcher, H. Xu, A. van Veelen, J.T. White, J. McCloy, X. Guo

3:50 380. Understanding the structure and dynamics of uranium-chlorine complexes in UCl_n - (KCl-LiCl) eutectics through atomistic simulations. A. Islam, X. Guo, **S. Banerjee**

4:10 382. Novel chloride volatility scheme for reprocessing advanced reactor used nuclear fuel. **J.M. Torrie**, I. Urraco, J. Wright, D. Rappleye

4:30 389. Rare earth element recovery from mixed chloride salts by isotachophoresis. **H. Hallikainen**, C. Ivory

Structures, Kinetics, and Thermodynamics at Interfaces

Smith Center for Undergraduate Excellence
CUE 219

Cosponsored by COLL

1:55 Introductory Remarks.

2:00 378. Probing the local coordination environment of atomically dispersed palladium supported on cerium oxide. **N.C. Nelson**, M. Prange, J. Nguyen, Z. Dohnalek

2:20 383. Interactions between plant cytochrome P450 reductase and mimics of plant ER membranes. **E.P. Jacobo**, J. Lewis, K. Shisler, J.A. Brozik, C. Kang

2:40 374. Thermodynamic driving forces of redox-dependent CPR insertion into biomimetic endoplasmic reticulum membranes. **M.J. Martinez**, J.D. Carder, E.L. Taylor, E.P. Jacobo, C. Kang, J.A. Brozik

3:00 Ice Cream Social.

3:30 384. Impact of oxygen-functional groups on CO_2 and CH_4 adsorption on carbon surfaces. **E.U. Osuagwu**, G. Loney, R.K. Szilagyi, N.P. Stadie

3:50 386. Investigating the role of induced macroporosity in ZIF-8 towards improved uptake kinetics in gas phase separations. **T. Hurley**

4:10 392. Enhancing and gating organic mixed ionic-electronic transport through local surface energy. **B. Collins**

New Frontiers in Mass Spectrometry and Gas-Phase Ion Manipulation

Smith Center for Undergraduate Excellence
CUE 209

Cosponsored by ANYL
B. Clowers, *Organizer*

2:15 Introductory Remarks.

2:20 327. Solving the "General Elution Problem" in ion mobility spectrometry. **E. Davis**, T. Koop, L. Vyhmeister, S. Gharari, J. Fehr, G. Valdez

3:00 Ice Cream Social.

3:30 326. Structures for lossless ion manipulations (SLIM) enabled mobility selective ion soft-landing for orthogonal characterization. **S.V. Garimella**

3:50 328. Hydrogen/deuterium exchange in ion mobility spectrometers: new instrumentation approaches and ion chemistry advantages. **D. Wu**, N. Morgan, H. Schramm, Z. Kinlein, B. Clowers

4:10 329. Multiplexing strategies for improving ion utilization in ion mobility spectrometry-mass spectrometry. **C. Greer**, E.R. Cabrera, N.W. Buzitis, B. Clowers

Engineering Solutions for Environmental Chemistry Challenges

Smith Center for Undergraduate Excellence
CUE 207

Cosponsored by ENVR
J. Moberly, *Organizer*

3:30 330. Withdrawn

3:50 331. Upcycling carbon fiber-reinforced epoxy composites into hydrothermally recyclable vitrimer composites under mild conditions. **B. Zhao**, C. Hao, J. Zhang

4:10 332. Enhancing the gaseous iodine adsorption of hierarchically porous UiO-66 MOFs via aromatic substitution. **S. Yu**, Q. Zhang

4:30 Closing Remarks.

WEDNESDAY MORNING

Exploring the Chemistry of Next-Generation Coolants and Solvents: Structure and Properties of Coolants, Fuels and Solvents

Smith Center for Undergraduate Excellence
CUE 409

Cosponsored by ENFL and NUCL
R. Gakhar, *Organizer*

8:00 Introductory Remarks.

8:05 353. Electrochemical behavior of corrosion and fission products in molten salts. P. Asghari-Rad, **H. Kim**

8:35 362. Calorimetric measurements of thermodynamic properties of molten salt: a case study of the binary eutectic $MgCl_2$-NaCl from 400 to 800 °C. **X. Guo**, J. Eakin, B. Merrill, K. Dahal, C. Ivory, J. Schorne-Pinto, T. Besmann, J. Lonergan

8:55 355. Absorption spectroscopy for interrogating structure and speciation in molten salt reactor- and pyroprocessing-relevant molten salt mixtures. **J. Moon**, **D. Chidambaram**

9:15 357. Determining thermophysical properties of actinide molten salts via AIMD. **B. Beeler**, D. Andersson, K. Duemmler

9:35 358. Unraveling complexities of speciation in molten salts. **S. Roy**, V. Bryantsev, L. Gibson, S. Gill, A. Frenkel, R. Gakhar

9:55 Morning Coffee/Snack Break.

10:30 359. In-situ monitoring of molten salts and off-gases using a combined spectroscopic approach. **m. raab**, A. Williams, R. Gakhar, R. Roper, Q. Yang

10:50 360. Iodide species in LiCl-KCl matrix: Thermal behavior and phase distribution with temperature. **M. Rodriguez Laguna**, R.H. Lazzari Garcia, S.T. Anderson, S. Gill, G. Holmbeck, R. Gakhar

11:10 361. Determining optical basicity of molten chloride salts by probe ion doping. **L. Sharpless**, J. Moon, D. Chidambaram

11:30 356. Withdrawn

11:50 354. Withdrawn

Breaking Borders and Building Bonds at Interfaces

Smith Center for Undergraduate Excellence
CUE 219

Cosponsored by ANYL and COLL
J. Bell, *Organizer*

8:05 Introductory Remarks.

8:10 333. Synthesis, structural characterization, and optical properties of core–satellite nanoassemblies comprising SiO_2 and Ag. **M. Haider**, W. Miran, M. Niazi

8:30 334. Development of a fully 3D-printed solid-contact ion-selective electrode. **S. Farahani**, D. Glasco, J. Bell

8:50 335. Gaining insight into the molecular organization within the nematic phase of bent-core oxadiazole containing liquid crystals. **E. Scharrer**

9:10 336. Regulation of zinc cycling on non-zinc surfaces using permanent magnets. **W.T. McLeod**, S. Pedaballi, J. Bell

9:30 337. Advanced thin film polyampholyte coatings to prevent bacteria adhesion and biofilm formation in microgravity. **A.E. Shea**, S. Oneida, K.V. Waynant, M. Bernards

9:50 Morning Coffee/Snack Break.

10:20 338. Pore functionalization in metal-organic frameworks for enhanced carbon dioxide capture in humid environments. **A. Gladysiak**, K.C. Stylianou

10:40 339. Unveiling poly(2-chloro-3,5, 6-trisulfide-1,4-benzoquinone) (PCTB) as a potential cathode material for aqueous zinc ion batteries. **S. Pedaballi**, W.T. McLeod, K.A. McCracken, J. Gordon

11:00 340. Probing Nanomorphology of guest component in ternary organic photovoltaics. **T. Melody**, A. Patterson, B. Collins

11:20 341. Combing DFT based optical models with resonant X-ray reflectivity to measure orientation at buried interfaces. **H. Heilman**, B. Collins

11:40 342. Green solvent enables record performance in model PCDTBT:PCBM organic solar cells through reduced recombination. **A. Patterson**, B. Collins

Advancements and Training in Nuclear Materials Processing and Sensing in Harsh Environments

Smith Center for Undergraduate Excellence
CUE 418

Cosponsored by NUCL
S. A. Bryan, A. Schafer Medina, *Presiding*

8:25 Introductory Remarks.

8:30 344. Development and retention of a sustainable nuclear workforce. **J.L. Bryant**

9:10 345. Determination of ^{133}Cs, ^{135}Cs, and ^{137}Cs isotopes in the presence of Ba using ICP-MS/MS. T. McCall, **M. Lindberg**

9:30 346. Electrochemical investigation of Europium and Uranium redox kinetics using Boron-Doped Diamond electrodes in a molten salt environment. **J.M. Rakos**, N. Damjanovic, D. weber,

S. Kazemeini, A. Lines, S.A. Bryan, W.R. Heineman, S.D. Branch, C.A. Rusinek

9:50 Morning Coffee/Snack Break.

10:20 347. Development of online monitoring sensors and chemometric models for chemical composition analysis in molten salts. **A. Schafer Medina**, S. Choi, J.M. Rakos, S.D. Branch, H. Felmy, S.A. Bryan, A. Lines

10:40 348. Substitution of concentrated nitric for fuming nitric in Sr-90 separation for Hanford Tank Waste. **A. Killgore**

Breaking Borders in the Nuclear Science Enterprise

Smith Center for Undergraduate Excellence
CUE 419

Cosponsored by NUCL
J. M. Boncella, A. Lines, *Organizers*
N. J. Henson, *Presiding*

8:25 Introductory Remarks.

8:30 349. Progress in Hanford tank waste treatment. **T. Brouns**

9:10 350. Nuclear nanotechnology: Mechanisms behind the formation of uranium oxide nanoparticles. **L.M. Moreau**

9:50 Morning Coffee/Snack Break.

10:20 351. Towards real time optimization of chemical processing of a nuclear forensics sample. **N.E. Uhnak**, M. Dinpajooh, A.M. Ritzmann, R. Overstreet, L.A. Metz

11:00 352. Re-evaluating the value proposition of recycling used nuclear fuel. **A. Lines**, W. Nutt, S. Arm, G.B. Hall, G.J. Lumetta, P. Paviet, B. Riley, B.N. Seiner, P.K. Thallapally, A. Zbib

Breaking Borders and Building Bonds at the Limits of Detection

Smith Center for Undergraduate Excellence
CUE 209

Cosponsored by ANYL
E. Linskey, *Organizer*

8:45 Introductory Remarks.

8:50 274. Super-resolution IR microscopy that can be combined with simultaneous Raman and co-located fluorescence for a wide range of applications. **t. yan**, E. Dillon, J. Anderson, M. Kansiz

9:10 275. Spatially resolved cyano radical in nitromethane monopropellant combustion. **B.N. Dean**, O. Wolff, R.A. Walker

9:30 276. Pushing analytical detection limits to investigate high-purity materials for dark matter detectors. **M. di Vacri**, **T. Schlieder**, N. Rocco, I. Arnquist, K. Hobbs, A. French

9:50 Morning Coffee/Snack Break.

10:20 277. Extraction and analysis of SVOC in Hanford tank waste by SBSE/TD/GC-MS. **S. Bairai**

10:40 385. 1- and 2-dimensional imaging of high pressure monopropellant combustion. **O. Wolff**, B.N. Dean, J.B. Sinrud, R.A. Walker

11:00 390. Elemtal analysis of challenging Matsricies by ICP-MS. **E.T. Linskey**

Breaking Borders and Building Bonds Through Synthesis

Smith Center for Undergraduate Excellence
CUE 416

Cosponsored by CATL
W. D. Bailey, *Organizer*

8:45 Introductory Remarks.

8:50 363. Cr^{2+} in square planar coordination: durable and intense magenta pigments inspired by lunar mineralogy. **A. Verma**, J. Li, M. Subramanian

9:10 364. H-X addition to ruthenium complexes bearing PNNNP ligands. **N. Fisher**, J.M. Boncella

9:30 365. First-row transition metal pincer complexes for the electrochemical reduction of CO_2. **W.D. Bailey**, J. Smith, S. von Fuchs, S. Dillinger

NORM 2024 Shuttle Schedules

Marriott Shuttle

This shuttle services the Marriott Courtyard (1295 NE North Fairway Rd, Pullman, WA 99163) and the Residence Inn (1255 NE North Fairway Rd, Pullman, WA 99163) and provides transport to/from the hotels to the CUE and the Awards banquet.

Sunday, June 23rd		
Leave CUE	Leave Residence Inn	Arrive @CUE
	3:00 PM	3:05 PM
3:30 PM	3:35 PM	3:40 PM
4:00 PM	4:05 PM	4:10 PM
4:15 PM	4:20 PM	4:25 PM
4:30 PM	4:35 PM	4:40 PM
4:45 PM	4:50 PM	4:55 PM
5:00 PM	5:05 PM	5:10 PM
5:30 PM	5:35 PM	5:40 PM
6:00 PM	6:05 PM	6:10 PM
6:30 PM	6:35 PM	6:40 PM
7:00 PM	7:05 PM	7:10 PM
7:30 PM	7:35 PM	7:40 PM
8:00 PM	8:05 PM	8:10 PM
8:30 PM	8:35 PM	8:40 PM
9:00 PM	9:05 PM	9:10 PM
9:30 PM	9:35 PM	9:40 PM
10:00 PM	10:05 PM	10:10 PM
10:15 PM	10:20 PM	

Travel time between Marriott Hotels and CUE ~ 5 minutes

Monday, June 24th		
Leave CUE	Leave Residence Inn	Arrive @CUE
	7:00 AM	7:05 AM
7:15 AM	7:20 AM	7:25 AM
7:35 AM	7:40 AM	7:45 AM
7:55 AM	8:00 AM	8:05 AM
8:15 AM	8:20 AM	8:25 AM
8:35 AM	8:40 AM	8:45 AM
9:00 AM	9:10 AM	9:15 AM
9:30 AM	9:35 AM	9:40 AM
10:15 AM	10:25 AM	10:30 AM
11:00 AM	11:10 AM	11:15 AM
11:45 AM	11:50 AM	11:55 AM
12:15 PM	12:20 PM	12:25 PM
12:45 PM	12:50 PM	12:55 PM
1:15 PM	1:20 PM	1:30 PM
2:00 PM	2:05 PM	2:10 PM
2:45 PM	2:50 PM	2:55 PM
3:30 PM	3:35 PM	3:40 PM
4:15 PM	4:20 PM	4:25 PM
4:45 PM	4:50 PM	4:55 PM
5:15 PM	5:20 PM	5:25 PM
5:45 PM	5:50 PM	5:55 PM
6:15 PM	6:20 PM	6:25 PM
6:45 PM	6:50 PM	6:55 PM
7:45 PM	7:50 PM	7:55 PM
8:30 PM	8:35 PM	8:40 PM
9:15 PM	9:20 PM	9:25 PM
9:45 PM	9:50 PM	9:55 PM
10:05 PM	10:10 PM	10:15 PM

Travel time between Marriott Hotels and CUE ~ 5 minutes

Tuesday, June 25th				
Leave CUE	Leave Awards Banquet	Leave Residence Inn	Arrive @ CUE	Arrive @ Awards Banquet
		7:00 AM	7:05 AM	
7:15 AM		7:20 AM	7:25 AM	
7:35 AM		7:40 AM	7:45 AM	
7:55 AM		8:00 AM	8:05 AM	
8:15 AM		8:20 AM	8:25 AM	
8:35 AM		8:40 AM	8:45 AM	
9:00 AM		9:05 AM	9:10 AM	
9:30 AM		9:35 AM	9:40 AM	
10:15 AM		10:20 AM	10:25 AM	
11:00 AM		11:05 AM	11:10 AM	
11:45 AM		11:50 AM	11:55 AM	
12:15 PM		12:20 PM	12:25 PM	
12:45 PM		12:50 PM	12:55 PM	
1:15 PM		1:20 PM	1:25 PM	
2:00 PM		2:05 PM	2:10 PM	
2:45 PM		2:50 PM	2:55 PM	
3:30 PM		3:35 PM	3:40 PM	
4:15 PM		4:20 PM	4:25 PM	
4:45 PM		4:50 PM	4:55 PM	
5:15 PM		5:20 PM		5:25 PM
5:45 PM		5:50 PM		5:55 PM
	6:05 PM	6:10 PM		6:15 PM
	7:00 PM	7:05 PM		7:10 PM
	7:45 PM	7:50 PM		7:55 PM
	8:30 PM	8:35 PM		8:40 PM
	9:00 PM	9:05 PM		9:10 PM
	9:20 PM	9:25 PM		

Travel time between Marriott Hotels and CUE (or Awards Banquet) ~ 5 minutes

Wednesday, June 26th		
Leave CUE	Leave Residence Inn	Arrive @CUE
	7:00 AM	7:05 AM
7:15 AM	7:20 AM	7:25 AM
7:35 AM	7:40 AM	7:45 AM
7:55 AM	8:00 AM	8:05 AM
8:15 AM	8:20 AM	8:25 AM
8:35 AM	8:40 AM	8:45 AM
9:00 AM	9:05 AM	9:10 AM
9:30 AM	9:35 AM	9:40 AM
10:15 AM	10:20 AM	10:25 AM
11:00 AM	11:05 AM	11:10 AM
11:45 AM	11:50 AM	11:55 AM
12:15 PM	12:20 PM	12:25 PM
12:45 PM	12:50 PM	12:55 PM
1:15 PM	1:20 PM	1:30 PM
2:00 PM	2:05 PM	2:10 PM
2:45 PM	2:50 PM	2:55 PM

Travel time between Marriott Hotels and CUE ~ 5 minutes

Hampton Shuttle **This shuttle services the Hampton Inn (1190 SE Bishop Blvd, Pullman, WA 99163) and provides transport to/from the hotels to the CUE and the Awards banquet.**

Sunday, June 23rd		
Leave CUE	Leave Hampton Inn	Arrive @CUE
	3:00 PM	3:05 PM
3:30 PM	3:35 PM	3:40 PM
4:00 PM	4:05 PM	4:10 PM
4:15 PM	4:20 PM	4:25 PM
4:30 PM	4:35 PM	4:40 PM
4:45 PM	4:50 PM	4:55 PM
5:00 PM	5:05 PM	5:10 PM
5:30 PM	5:35 PM	5:40 PM
6:00 PM	6:05 PM	6:10 PM
6:30 PM	6:35 PM	6:40 PM
7:00 PM	7:05 PM	7:10 PM
7:30 PM	7:35 PM	7:40 PM
8:00 PM	8:05 PM	8:10 PM
8:30 PM	8:35 PM	8:40 PM
9:00 PM	9:05 PM	9:10 PM
9:30 PM	9:35 PM	9:40 PM
10:00 PM	10:05 PM	10:10 PM
10:15 PM	10:20 PM	
Travel time between Hampton Inn and CUE ~ 5 minutes		

Wednesday, June 26th		
Leave CUE eave CUE	Leave Hampton Inn	Arrive @CUE
	7:00 AM	7:05 AM
7:15 AM	7:20 AM	7:25 AM
7:35 AM	7:40 AM	7:45 AM
7:55 AM	8:00 AM	8:05 AM
8:15 AM	8:20 AM	8:25 AM
8:35 AM	8:40 AM	8:45 AM
9:00 AM	9:10 AM	9:15 AM
9:30 AM	9:35 AM	9:40 AM
10:15 AM	10:25 AM	10:30 AM
11:00 AM	11:10 AM	11:15 AM
11:45 AM	11:50 AM	11:55 AM
12:15 PM	12:20 PM	12:25 PM
12:45 PM	12:50 PM	12:55 PM
1:15 PM	1:20 PM	1:25 PM
2:00 PM	2:05 PM	2:10 PM
2:45 PM	2:50 PM	2:55 PM
3:00 PM	3:05 PM	3:10 PM
Travel time between Hampton Inn and CUE ~ 5 minutes		

Monday, June 24th		
Leave CUE	Leave Hampton Inn	Arrive @CUE
	7:00 AM	7:05 AM
7:15 AM	7:20 AM	7:25 AM
7:35 AM	7:40 AM	7:45 AM
7:55 AM	8:00 AM	8:05 AM
8:15 AM	8:20 AM	8:25 AM
8:35 AM	8:40 AM	8:45 AM
9:00 AM	9:10 AM	9:15 AM
9:30 AM	9:35 AM	9:40 AM
10:15 AM	10:20 AM	10:25 AM
11:00 AM	11:05 AM	11:10 AM
11:45 AM	11:50 AM	11:55 AM
12:15 PM	12:20 PM	12:25 PM
12:45 PM	12:50 PM	12:55 PM
1:15 PM	1:20 PM	1:25 PM
2:00 PM	2:05 PM	2:10 PM
2:45 PM	2:50 PM	2:55 PM
3:30 PM	3:35 PM	3:40 PM
4:15 PM	4:20 PM	4:30 PM
4:45 PM	4:50 PM	4:55 PM
5:15 PM	5:20 PM	5:25 PM
5:45 PM	5:50 PM	5:55 PM
6:15 PM	6:20 PM	6:25 PM
6:45 PM	6:50 PM	6:55 PM
7:45 PM	7:50 PM	7:55 PM
8:30 PM	8:35 PM	8:40 PM
9:15 PM	9:20 PM	9:25 PM
9:45 PM	9:50 PM	9:55 PM
10:00 PM	10:05 PM	
Travel time between Hampton Inn and CUE ~ 5 minutes		

Tuesday, June 25th				
Leave CUE	Leave Awards Banquet	Leave Hampton Inn	Arrive @ CUE	Arrive @ Awards Banquet
		7:00 AM	7:05 AM	
7:15 AM		7:20 AM	7:25 AM	
7:35 AM		7:40 AM	7:45 AM	
7:55 AM		8:00 AM	8:05 AM	
8:15 AM		8:20 AM	8:25 AM	
8:35 AM		8:40 AM	8:45 AM	
9:00 AM		9:05 AM	9:10 AM	
9:30 AM		9:35 AM	9:40 AM	
10:15 AM		10:20 AM	10:25 AM	
11:00 AM		11:05 AM	11:10 AM	
11:45 AM		11:50 AM	11:55 AM	
12:15 PM		12:20 PM	12:25 PM	
12:45 PM		12:50 PM	12:55 PM	
1:15 PM		1:20 PM	1:25 PM	
2:00 PM		2:05 PM	2:10 PM	
2:45 PM		2:50 PM	2:55 PM	
3:30 PM		3:35 PM	3:40 PM	
4:15 PM		4:20 PM	4:25 PM	
4:45 PM		4:50 PM	4:55 PM	
5:15 PM		5:20 PM		5:30 PM
5:45 PM		5:50 PM		6:00 PM
	6:05 PM	6:15 PM		6:25 PM
	7:00 PM	7:10 PM		7:20 PM
	7:45 PM	7:55 PM		8:05 PM
	8:30 PM	8:40 PM		8:50 PM
	9:00 PM	9:10 PM		9:20 PM
	9:20 PM	9:30 PM		
Travel time between Hampton Inn and CUE ~ 5 minutes				
Travel time between Hampton Inn and Awards Banquet ~ 9 minutes				

Coast Hilltop Inn Shuttle

This shuttle services the Coast Hilltop Inn (928 NW Olsen St, Pullman, WA 99163) and provides transport to/from the hotels to the CUE and the Awards banquet.

Sunday, June 23rd		
Leave CUE	Leave Hilltop	Arrive @CUE
	3:00 PM	3:10 PM
3:30 PM	3:40 PM	3:50 PM
4:00 PM	4:10 PM	4:20 PM
4:25 PM	4:35 PM	4:45 PM
4:50 PM	5:00 PM	5:10 PM
5:15 PM	5:25 PM	5:35 PM
6:00 PM	6:10 PM	6:20 PM
6:30 PM	6:40 PM	6:50 PM
7:00 PM	7:10 PM	7:20 PM
7:30 PM	7:40 PM	7:50 PM
8:00 PM	8:10 PM	8:20 PM
8:30 PM	8:40 PM	8:50 PM
9:00 PM	9:10 PM	9:20 PM
9:30 PM	9:40 PM	9:50 PM
10:00 PM	10:10 PM	10:20 PM
10:25 PM	10:35 PM	

Travel time between Hilltop and CUE ~ 8 minutes

Monday, June 24th		
Leave CUE	Leave Hilltop Inn	Arrive @CUE
	7:00 AM	7:10 AM
7:15 AM	7:25 AM	7:35 AM
7:40 AM	7:50 AM	8:00 AM
8:05 AM	8:15 AM	8:25 AM
8:30 AM	8:40 AM	8:50 AM
8:55 AM	9:05 AM	9:15 AM
9:30 AM	9:40 AM	9:50 AM
10:15 AM	10:25 AM	10:35 AM
11:00 AM	11:10 AM	11:20 AM
11:45 AM	11:55 AM	12:05 PM
12:30 PM	12:40 PM	12:50 PM
1:15 PM	1:25 PM	1:35 PM
2:00 PM	2:10 PM	2:20 PM
2:45 PM	2:55 PM	3:05 PM
3:30 PM	3:40 PM	3:50 PM
4:15 PM	4:25 PM	4:35 PM
4:45 PM	4:55 PM	5:05 PM
5:15 PM	5:25 PM	5:35 PM
5:45 PM	5:55 PM	6:05 PM
6:15 PM	6:25 PM	6:35 PM
6:45 PM	6:55 PM	7:05 PM
7:45 PM	7:55 PM	8:05 PM
8:30 PM	8:40 PM	8:50 PM
9:15 PM	9:25 PM	9:35 PM
9:45 PM	9:55 PM	10:05 PM
10:10 PM	10:20 PM	

Travel time between Hilltop and CUE ~ 8 minutes

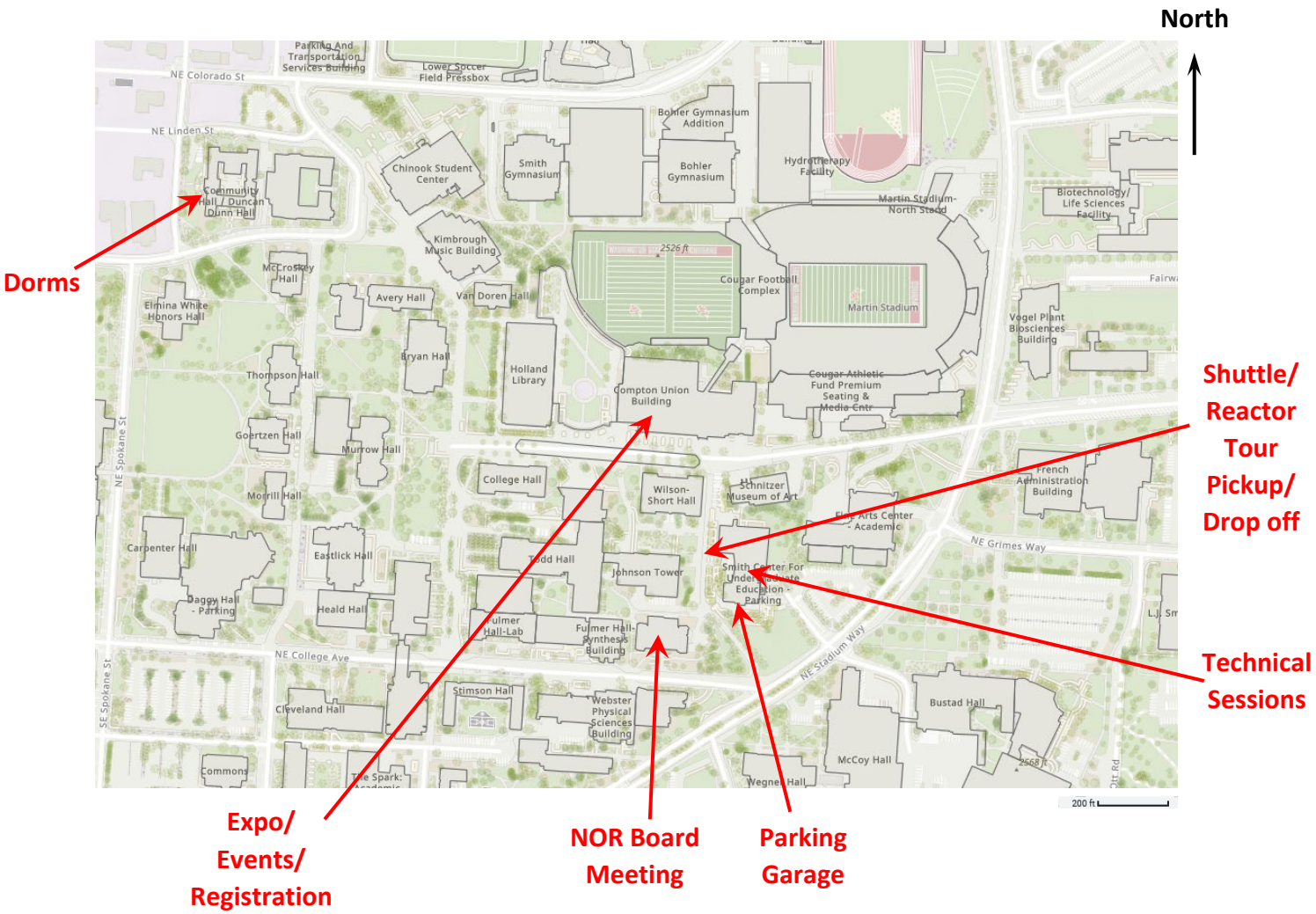
Tuesday, June 25th				
Leave CUE	Leave Awards Banquet	Leave Hilltop Inn	Arrive @ CUE	Arrive @ Awards Banquet
		7:00 AM	7:10 AM	
7:15 AM		7:25 AM	7:35 AM	
7:40 AM		7:50 AM	8:00 AM	
8:05 AM		8:15 AM	8:25 AM	
8:30 AM		8:40 AM	8:50 AM	
8:55 AM		9:05 AM	9:15 AM	
9:20 AM		9:30 AM	9:40 AM	
9:45 AM		9:55 AM	10:05 AM	
10:15 AM		10:25 AM	10:35 AM	
11:00 AM		11:10 AM	11:20 AM	
11:45 AM		11:55 AM	12:05 PM	
12:15 PM		12:25 PM	12:35 PM	
12:45 PM		12:55 PM	1:05 PM	
1:15 PM		1:25 PM	1:35 PM	
2:00 PM		2:10 PM	2:20 PM	
2:45 PM		2:55 PM	3:05 PM	
3:30 PM		3:40 PM	3:50 PM	
4:15 PM		4:25 PM	4:35 PM	
4:45 PM		4:55 PM	5:05 PM	
5:15 PM		5:25 PM		5:35 PM
5:45 PM		5:55 PM		6:05 PM
	6:05 PM	6:15 PM		6:25 PM
	7:00 PM	7:10 PM		7:20 PM
	7:45 PM	7:55 PM		8:05 PM
	8:30 PM	8:40 PM		8:50 PM
	9:00 PM	9:10 PM		9:20 PM
	9:20 PM	9:30 PM		

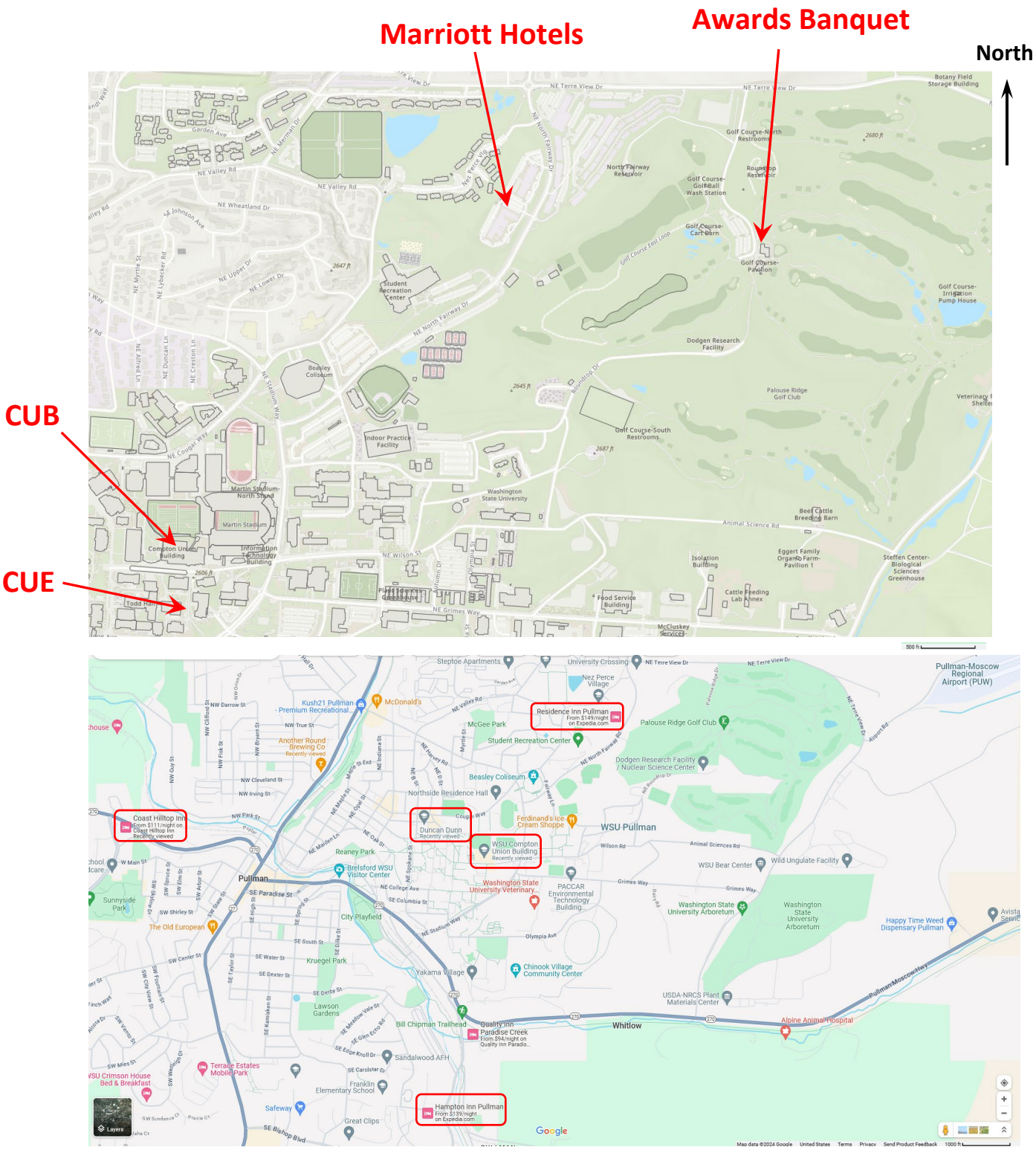
Travel time between Hilltop and CUE (or Awards Banquet) ~ 8 minutes

Wednesday, June 26th		
Leave CUE	Leave Hilltop Inn	Arrive @CUE
	7:00 AM	7:10 AM
7:15 AM	7:25 AM	7:35 AM
7:40 AM	7:50 AM	8:00 AM
8:05 AM	8:15 AM	8:25 AM
8:30 AM	8:40 AM	8:50 AM
8:55 AM	9:05 AM	9:15 AM
9:20 AM	9:30 AM	9:40 AM
9:45 AM	9:55 AM	10:05 AM
10:15 AM	10:25 AM	10:35 AM
11:00 AM	11:10 AM	11:20 AM
11:45 AM	11:55 AM	12:05 PM
12:15 PM	12:25 PM	12:35 PM
12:45 PM	12:55 PM	1:05 PM
1:15 PM	1:25 PM	1:35 PM
2:00 PM	2:10 PM	2:20 PM
2:45 PM	2:55 PM	3:05 PM

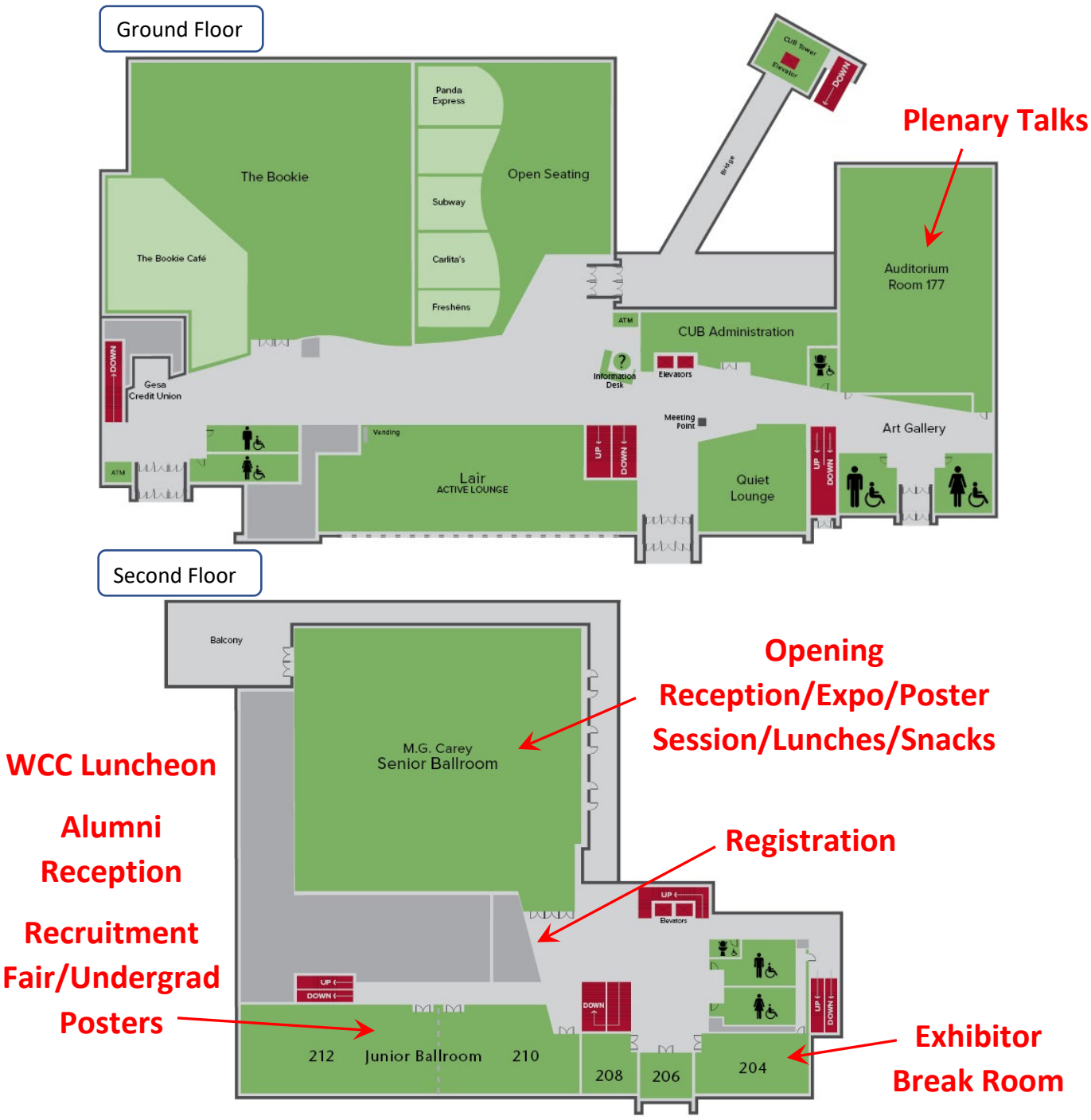
Travel time between Hilltop and CUE ~ 8 minutes

Pullman and Washington State University Campus Maps



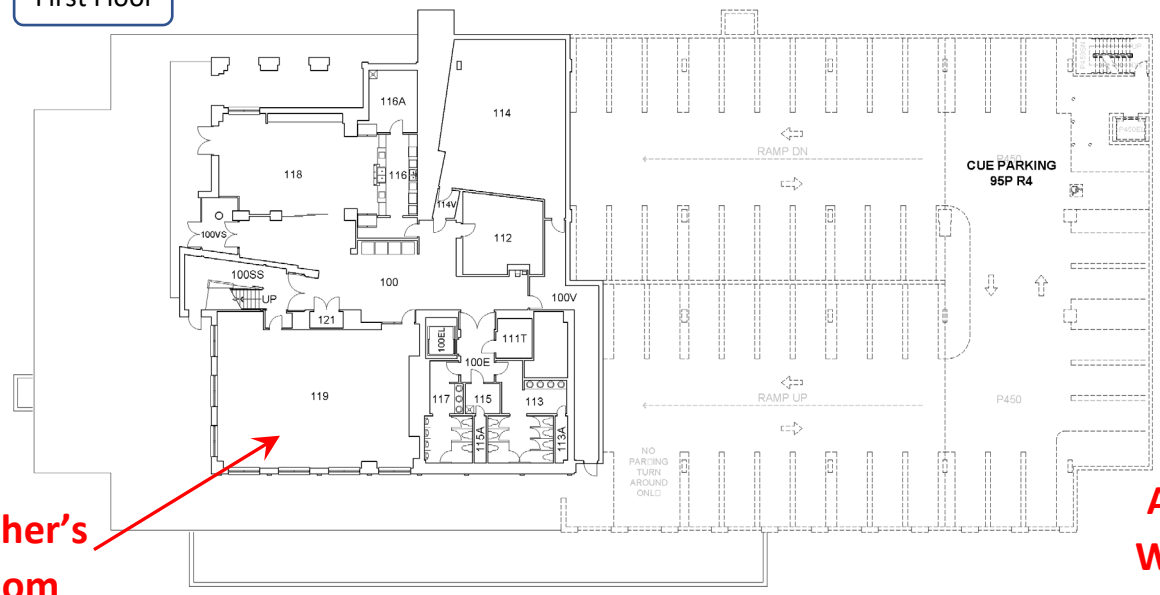

Marriott Hotels
Awards Banquet
North
CUB
CUE
Steptoe Apartments
University Crossing
Nez Perce Village
Residence Inn Pullman
Kush21 Pullman - Premium Recreational...
McDonald's
McGee Park
Student Recreation Center
Palouse Ridge Golf Club
Pullman-Moscow Regional Airport (PUW)
Another Round Brewing Co
Beasley Coliseum
Dodgen Research Facility / Nuclear Science Center
Northside Residence Hall
Coast Hilltop Inn
Duncan Dunn
Ferdinand's Ice Cream Shoppe
WSU Pullman
WSU Compton Union Building
Reaney Park
Brelsford WSU Visitor Center
Pullman
Washington State University Veterinary...
PACCAR Environmental Technology Building
WSU Bear Center
Wild Ungulate Facility
Sunnyside Park
The Old European
City Playfield
Kruegel Park
Washington State University Arboretum
Happy Time Weed Dispensary Pullman
Yakama Village
Chinook Village Community Center
Lawson Gardens
USDA-NRCS Plant Materials Center
Bill Chipman Trailhead
Quality Inn Paradise Creek
Whitlow
Alpine Animal Hospital
Pullman-Moscow Hwy
Sandalwood AFH
Terrace Estates Mobile Park
WSU Crimson House Bed & Breakfast
Franklin Elementary School
Safeway
Great Clips
Hampton Inn Pullman
Google

Compton Union Building (CUB)



Center for Undergraduate Excellence (CUE)

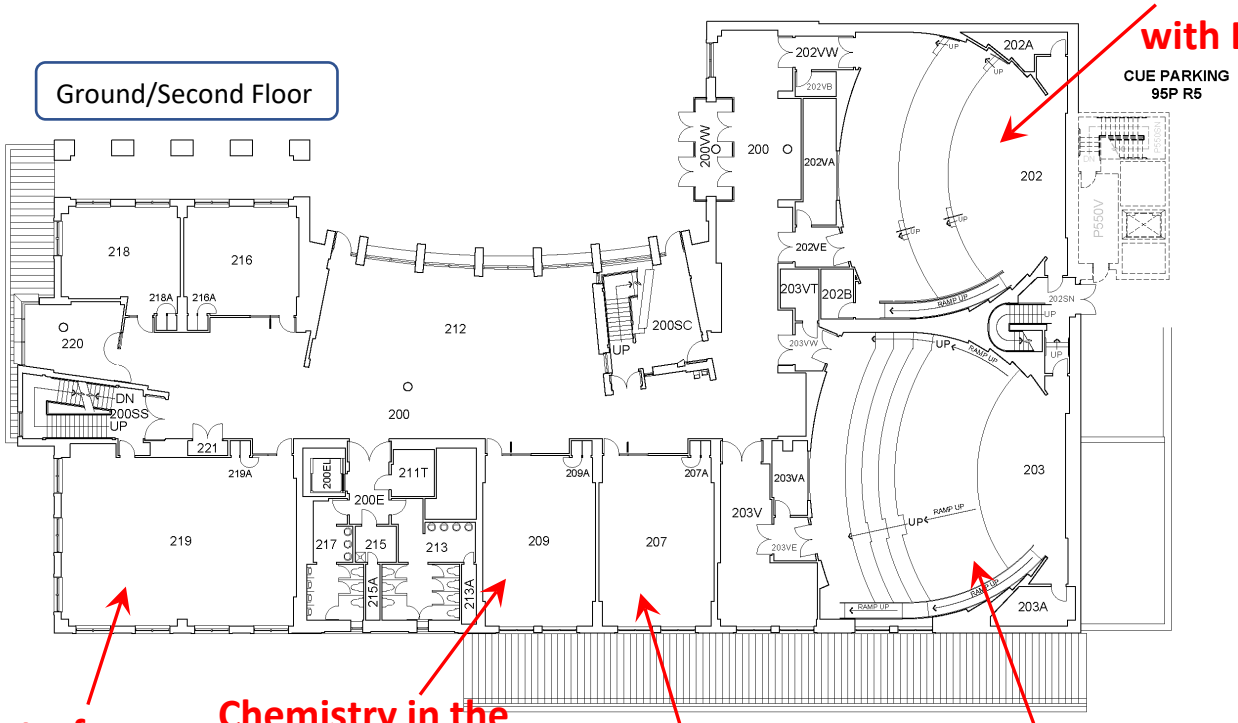
First Floor



Mother's Room

ACS Career Workshops/ Doughnuts with Directors

Ground/Second Floor

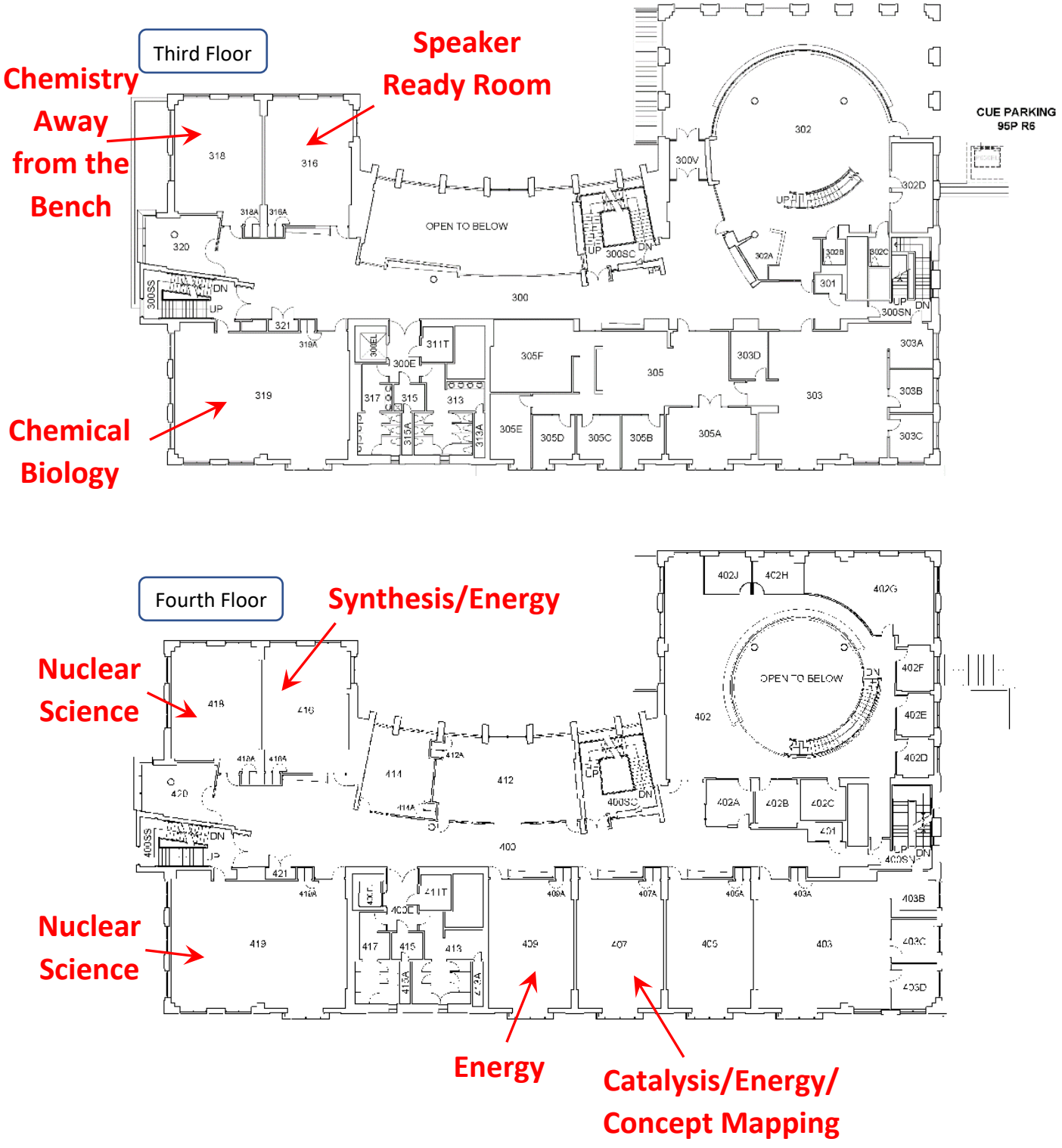


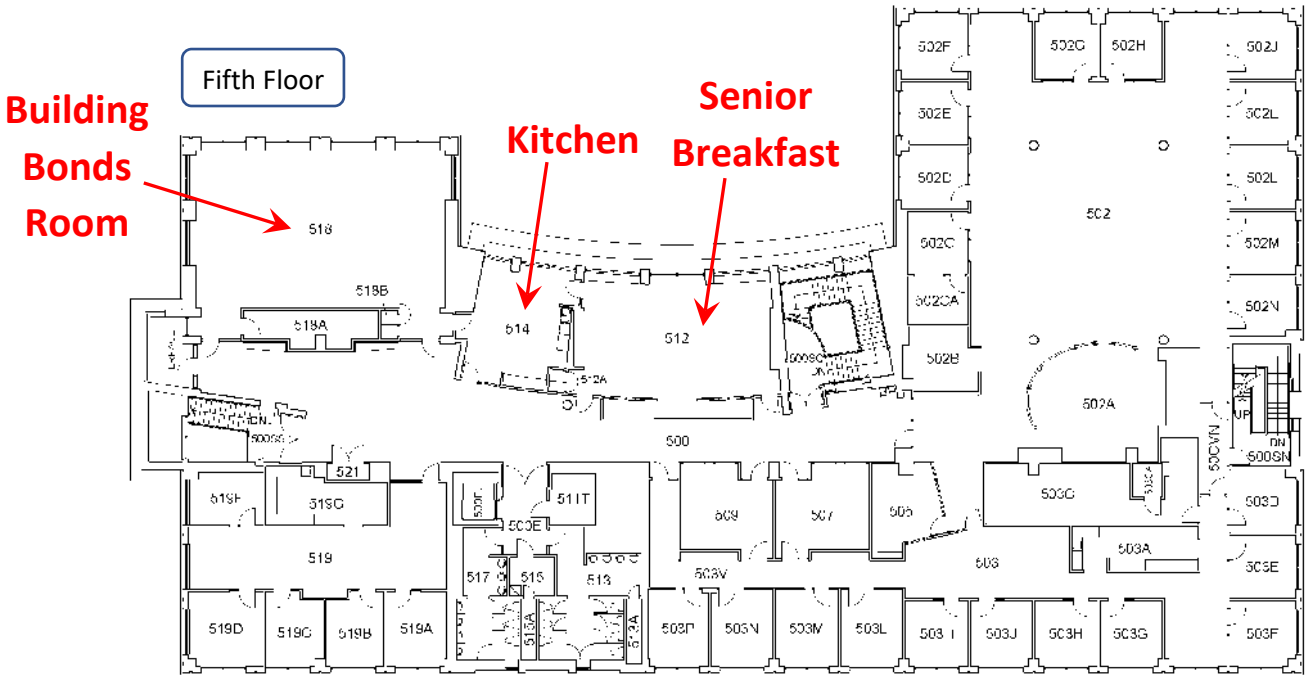
Interfaces

Chemistry in the Community/ Limits of Detection

Interfaces/ Environmental Challenges/ ACS Career Workshop

Innovation 2 Impact/ Safety Luncheon


Third Floor
Chemistry Away from the Bench
Speaker Ready Room
Chemical Biology
CUE PARKING 95P R6
OPEN TO BELOW
Fourth Floor
Synthesis/Energy
Nuclear Science
Nuclear Science
Energy
Catalysis/Energy/ Concept Mapping


Fifth Floor
Building Bonds Room
Kitchen
Senior Breakfast
518
518B
518A
514
512
500
521
519
519D
519C
519B
519A
517
515
513
509
507
505
503C
503A
503D
503E
503F
503H
503J
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502M
502CA
502N
502B
502A
500SN
UP
DN