

# NORM 2023

## WEDNESDAY EVENING

### Chemistry, Elevated: General Poster Session

E. Grumstrup, *Organizer*

**5:00 - 7:00**

Strand Union Building  
Ballroom ABCD

1. Carbon-13 tracers in heme: Approaches to making and characterizing stable isotope labeled heme. **V. Adedoyin**, R. Rodrigues da Silva, I. Omura, B. Tripet, J. DuBois
2. Ultrafast excited state dynamics of PCN-222 and PCN-223 MOFs. **S. Afrin**, E. Grumstrup
3. The study of surface chemistry and binding interactions of humic acid with polymer-encapsulated gold nanoparticles acting as model microplastics. **O. Akinsola**, S.E. Lohse
4. Synthesis of carbohydrate functionalized linear polymers to study protein carbohydrate interactions. **P. Anderson**, M. Cloninger
5. Algal adaptation to osmotic stress: The intersection of compatible solutes and metabolism. **A. Arnold**, S.M. Rincon, C.J. Holcomb, R. Gerlach, S. Viamajala, R.P. Carlson
6. Plasmonic nanocrescents as a tunable platform for vibrational circular dichroism spectroscopy. **A. Ballance**, A. Morren, J.S. Shumaker-Parry
7. Exploring electron-phonon coupling in quantum dots and organic molecules: A resonance raman spectroscopy perspective. **M. Baraazandeh**, K. Wang, M.L. Tang, A.M. Kelley
8. Phosphine-supported chromium complexes for catalytic reduction of dinitrogen to ammonia. **C.H. Beasley**, M.T. Mock
9. Catalytic ammonia oxidation to dinitrogen by a nickel complex with a tethered Cp\*-NHC ligand. **R. Benedict**, D. Stephens, M.T. Mock
10. withdrawn
11. Spectroscopy and the mode of action of perfluorohexyloctane for the treatment of dry eye. **D. Borchman**, J. Vittitow, R. Kissling, T. Millar, N.J. Stolowich

12. Systematic investigation of glucan functionalized dendrimers as tools for Dectin-1 binding, activation, and mechanism of action. **A. Buchholz**
13. Optically detected electrochemical impedance microscopy (OD-EIM): Impact of heterogeneity on charge transport of electrochemical devices. **M. Chowdhury**, E. Grumstrup, R. Boduch
14. Withdrawn
15. Raman assessment of oven and UV aging for hydroxyl-terminated polybutadiene. **S. Drake**, J.E. Patterson
16. Synthesis and studies of lactoside functionalized PAMAM dendrimers. **M.R. Frometa**, R. Tahir, M. Srivathsa, M. Cloninger
17. Solubility measurements for radioactive alkaline earth separations. **T. Gibbs**, A. Chemey
18. Exploring the impact of hydrogen bonding on reactivity in synthetic suicidal DNA Ada repair protein analogs. **M.E. Glassey**, E.C. Brown
19. Delivering on the therapeutic potential of peptide drugs: A case study on oxytocin. **H.J. Goodman**, L. Szabo, V. Kumirov, J. Streicher, T. Falk, M. Heien, R. Polt
20. Infusion of organic synthesis research into O-Chem I and II labs. **F. Guo**
21. Fluorescence anisotropy binding assays for the identification of inflammatory cytokine inhibitors. **D.L. Harrington**, D.L. Warner, L. Warner, C. Jorcyk
22. Thermophobic trehalose glycopolymers as smart C-type lectin receptor vaccine adjuvants. **A.T. Hendricksen**, S. Ezzatpour, A. Pulukuri, H. Aguilar-Carreno, R.J. Mancini
23. Determination of metabolic products of stable isotope-labeled U<sup>13</sup>C(6)-glucose in human breast carcinoma cell lines incubated in 3D tissue matrix scaffolds (TMS) using high resolution magic angle spinning (HRMAS) NMR reveals lactic acid as a potentially key metabolite in cancer proliferation and metastasis. **W.C. Hiscox**, R. Girdhari, K.F. Ruud, W. Li
24. PFAS contamination in the Arctic Circle from AFFF use at a military installation, Imikpuk Lake, Utqiagvik, Alaska. **L.A. Hoferkamp**, T. Sformo, S.B. Novell-Lane
25. Progress towards the total synthesis of mensacarcin. **B. Hopewell**, P.R. Blakemore, S. Loesgen
26. Improved all-solid-state Z-scheme photocatalytic system based on TiO<sub>2</sub>/Ag-Pd/CdZnS. **T.T. Isimjan**
27. Measuring induced lipid asymmetry in large unilamellar vesicles. **C. Johnson**, J.C. Conboy

28. Substrate specificity studies in Rhodopseudomonas palustris RpaI AHL synthase. **A. Kunde** M. Nhu-Lam, S. Swenson, R. Nagarajan.
29. Advanced operando methodology using pulse response spectrokinetic analysis of chromia propane dehydrogenation catalyst. **J. Malizia**, S. Palmer, M. Kunz, R. Xing, E. Grumstrup, D. Estrada, R. Fushimi
30. Effects of deuteration on the metabolism of Imidazo[1,2-a]pyridine-3-carboxamides for the treatment of tuberculosis. R. Lui, **K. Marshall**, R. Ma, K. Pham, G. Shetye, Z. Liu, S. Cho, H. Jeong, S. Franzblau, G. Moraski, M.J. Miller
31. Tuneability of hydrogen-type lithiation sites in soft carbon anodes. **C. McDaniel**, D. McGlamery, N.P. Stadie
32. Quantum-dot based functionalization of oxides as a precursor to a mass tracking platform. **S. Miley**, L.R. Hubbard, A. Bautista, E. Buck, A. Casella, A.J. Carman
33. Cold atmospheric-pressure plasma inactivation of Staphylococcus aureus biofilms in porcine skin models of chronic wounds. **D. Miller**, K. Poe, C. Rainey, J. Browning, K. Cornell
34. Optimizing fabrication methods for Li ion conducting ceramics. **S. Montoya**, S. Hisey
35. Exploring the ice nucleation mechanism of perfluorooctanoic acid with sum frequency generation spectroscopy. **L. Musegades**, J.D. Cyran
36. Controlling supramolecular assembly of M<sub>70</sub> rings in solution. **M.T. Nord**, M.D. Nyman
37. On the role of the  $\gamma$ -Zn(II) in the hydrolysis of Phosphate Esters by PHP. **D.P. Linder**, A. Linder, A.N. Bigley
38. Explorative study: Protein interaction and adsorption on specific thiol-gold nanoparticles model systems, using Ultraviolet-visible absorbance spectroscopy. **O. Odinakachukwu**, S.E. Lohse
39. Thioether-supported iron and cobalt complexes for activation of N<sub>2</sub> and other small molecules. **R.D. O'Neill**, C.J. Pollock, M. Mosquera, M.T. Mock
40. Mitigating intrinsic photophysical limitations in graphitic carbon nitride. **E. Orcutt**, E. Grumstrup, S. Varapragasam
41. Incremental kinetic titration of oxidation and reduction processes of CrO<sub>x</sub>/Al<sub>2</sub>O<sub>3</sub> catalyst used in propane dehydrogenation. **S. Palmer**, J. Malizia, M. Kunz, R. Xing, D. Estrada, R. Fushimi
42. Withdrawn

43. Acquired drug resistance enhances Imidazoquinoline efflux by P-Glycoprotein for PSMA targeted Immunotherapy. **A. Pulukuri**, C.E. Berkman
44. Proteomic insights to interaction between electroactive bacteria and rare earth elements. **A. Redwan**, Y. Fujita, D.W. Reed, C. St. Germain
45. Elucidating Facet-Dependent Redox Properties of Anatase TiO<sub>2</sub>. **A. Savoy**, W. Hu, L. Wang, A. Lipton, J. Li, L. Kovarik, C. Dun, J. Urban, J. Hu, J. Huang, J. Sun, Y. Wang
46. Examining photocatalyzed reactions of the surface of Au core/transition metal shell nanoparticles: The importance of a transition metal shell in enhancing reaction outcomes. **I. Shah**
47. Inactivation of viral pathogens using a novel cold atmospheric pressure plasma array. **K.N. Sosa**, S. Rood, S. Knowlton, J. Browning, K. Cornell
48. Synthesis and characterization of lactose and TF antigen functionalized PAMAM dendrimers. **M. Srivathsa**, R. Tahir, M.R. Frometa, M. Cloninger
49. Multivalent interactions between galectins and glycodendrimers in cancer progression. **R. Tahir**, M.R. Frometa, M. Srivathsa, M. Cloninger
50. Mechanistic analysis of platinum active site modification and enhancement by atomic layer deposition. **B. Thompson**, S. Kaur, H. Nguyen, J. Burger, A. Dameron, S. Moulton, C. Costello, J. Qianjun Chen, M. Kunz, K. Goulas, L. Arnadottir, R. Fushimi
51. Quantitative analysis of mitragynine in commercial Kratom products. **E.B. Walker**, N. Elmer, A. Myers
52. Trapping and characterization of a radical intermediate formed by the radical SAM peptide epimerase OspD. **W.G. Walls**, T.M. Delridge, A.L. Vagstad, J. Piel, W.E. Broderick, J.B. Broderick
53. Sampling microbial volatile communication in a novel segregated coculture device. **T. Wang**, J. Tokihiro, L. Mikaliunaite, U. Lee, E. Berthier, R.E. Synovec, A.B. Theberge
54. Squeezing properties of degenerate three and two-level lasers with non-degenerate sub-harmonic light. **G.K. Watiro**
55. Topological ion insertion mechanisms in zeolite-templated carbons. **C.J. Welty**, N.P. Stadie
56. Direct air capture of carbon dioxide using reactive alkali tetraperoxo titanates. **K. Wiese**
57. Electrophoretic separation of rare earth elements using a fused silica microfluidic device. **A. Williams**, D. Bottenus, R. Wojcik, M. Salalila, S.D. Branch

## Plenary

E. Grumstrup, *Organizer*  
J. DuBois, *Presiding*

Strand Union Building  
Ballroom ABCD

**7:00** President's Welcome.

**7:15 58.** Radicals as the key to nature's most difficult reactions. **J.B. Broderick**

**8:15** Q&A.

## THURSDAY MORNING

### Metabolic Networks and Multiomics

B. Bothner, *Organizer, Presiding*

Norm Asbjornson Hall  
NAH 137

**8:00 93.** Total synthesis and structure-function analysis of Bacitracin A. **J.H. Griffin**

**8:20 94.** Detection of Vigabatrin accumulation in murine eye and brain tissue using MALDI-IMS. **C. Leach**, J. Roullet, K. Gibson, X. Pu, K. Cornell

**8:40 95.** Untargeted metabolomic analysis of acute lead exposure to Danio rerio embryos using LC-MS/MS. **G. Cooper**, T.K. Hunt-Smith, H. Fausset, C. Merzdorf, B. Bothner

**9:00 96.** Inorganic arsenic treatments alter lipidomic profiles of Escherichia coli. **B. Sather**, H. Fausset, A. Knowlton, C. Kayser, G. Gill, S. Spurzem, B. Bothner

**9:20 97.** Identifying novel cysteine metabolic fates in NRF2-activated bile duct cancer cells. A. Vigil, K. Davidsen, J. Crainic, **L. Sullivan**

**9:40** Intermission.

**10:00 98.** Monitoring health and nutritional responses using deep data and wearables. **M. Snyder**

**10:40 99.** Plasma protein biomarkers predict both the development of persistent autoantibodies and type 1 diabetes 6 months prior to the onset of autoimmunity: the TEDDY Study. E.

Nakayasu, L. Bramer, C. Ansong, A. Schepmoes, T. Fillmore, M. Gritsenko, Y. Gao, P. Piehowski, D. Orton, R. Moore, W. Qian, S. Sechi, B. Frohnert, J. Toppari, A. Ziegler, A. Lernmark, W. Hagopian, B. Akolkar, R. Smith, M. Rewers, B.M. Webb-Robertson, **T.O. Metz**

## **Applications of Analytical and Radiochemistry for Harsh Environments**

S. A. Bryan, *Organizer*

S. D. Branch, E. Campbell, A. Schafer Medina, A. Westesen, *Presiding*

Strand Union Building  
SUB 233

**8:00 59.** Three decades of process monitoring applications directed toward the nuclear fuel cycle. **S.A. Bryan**, A. Lines, G.L. Nelson, J.M. Bello

**8:20 60.** Spectroscopic analysis of uranium behavior in molten salt reactor conditions. **S.D. Branch**, H. Felmy, A. Schafer Medina, S.A. Bryan, A. Lines

**8:40 61.** Development of Raman and UV-Vis immersion probes for use in harsh environments. **A. Schafer Medina**, H. Felmy, S.D. Branch, M. Vitale-Sullivan, A. Lines, S.A. Bryan

**9:00 62.** Methods for creating tungsten oxide micro cubes as a model for a plutonium with luminescent tracers to be used for mass tracking. **A. Bautista**, L.R. Hubbard, S. Miley, E. Buck, A. Casella, A.J. Carman

**9:20 63.** R-G-B boolean image analysis of exploded particulate debris laced with luminescent tracers. **L.R. Hubbard**, A. Bautista, S. Miley, C. Reed, M. Lonsway, C. Allen, M. Liezers, M. Foxe, A. Carman

**9:40** Intermission.

**10:00 64.** Integration of Raman and absorption fiber optic probes into a microfluidic chip. **J. Bello**, C. Gasbarro, S.A. Bryan, A. Lines, G.L. Nelson

**10:20 65.** Boron-doped diamond as an electrode material for fundamental redox studies in chloride molten salts. **J.M. Rakos**, S. Kazemeini, D. Weber, S.D. Branch, S.A. Bryan, A. Lines, C. Rusinek

**10:40 66.** Iodine and technetium removal from Hanford low activity waste. **A. Westesen**, C. Alvarez, A. Carney, R. Peterson, R. Asmussen

**11:00 67.** Aluminum dissolution processing for HLW sludges. **A. Robb**, A. Westesen, N. Cappella, C. Alvarez, R. Peterson, N. Machara

**11:20 68.** withdrawn

**11:40 69.** Impact of sodium concentration on Cs distribution with crystalline silicotitanate ion exchange media in Hanford tank waste and simulants. **E. Campbell**, A. Westesen, C. Alvarez, R. Peterson, M. Landon

**12:00 70.** Crystalline silicotitanate ion exchange performance on cesium removal in various dilutions of Hanford tank waste. **C. Alvarez**, A. Westesen, E. Campbell, A. Carney, T.T. Trangle, R. Peterson, M. Landon

## **Dynamic Catalyst Science and Flexible Chemical Manufacturing**

D. Maiti, *Organizer*

R. Fushimi, *Organizer, Presiding*

Strand Union Building

Ballroom D

**8:00 71.** Chemical looping conversion of CH<sub>4</sub>/CO<sub>2</sub> to syngas on 5wt.%Ni/Ce<sub>0.6</sub>Zr<sub>0.4</sub>O<sub>2</sub> catalyst: Impact of dynamic accumulation of surface carbon and oxygen vacancies. **Z.C. Benedict**, S. Ifkithar, D. Maiti, Y. Wang, F. Li, Y. Yang, R. Fushimi

**8:20 72.** Elucidating the influence of electric fields on Fe oxidation via multiscale models and atom probe tomography. **N. Cardwell**, S.V. Lambeets, I. Onyango, Y. Wang, T. Visart de Bocarme, D. Perea, J. McEwen

**8:40 73.** Propene ammoxidation by forced dynamic operation over bismuth molybdate-based catalysts. **Z. Gan**, L. Grabow, W. Epling

**9:00 74.** Operando investigation of PdCu catalysts during diesel oxidation catalysis. S.T. Kristy, **K. Goulas**

**9:20 75.** Improving the catalytic microreactor performance through hydrodynamic manipulation. **A. Mehdizadeh**, N. Karimi

**9:40** Intermission.

**10:00 76.** Sustainable production of aromatics via methane dehydroaromatization: role of dynamic carbon accumulation. M. Hossain, M. Rahman, G. Dhillon, D. Maiti, E. Sobchinsky, M. Kunz, R. Fushimi, **S. Jatib Khatib**

**10:40 77.** Tuning catalytic activity with forced dynamic operation. Y. Liu, K. Kusima, **L. Grabow**

**11:20 78.** Engineering operando and in situ studies to assess structure-activity relationships on supported vanadium oxide catalyts and shaped catalysts. **M.A. Banares**

### **Elevating Future Chemistry: Recent Advancements Led by Graduate Students**

Graduate Student Association-MSU, *Organizers*  
Emma Orcutt, *Presiding*

Strand Union Building  
SUB 235

**8:00 79.** Quantifying noise effects in optical measures of excited state transport. **J.J. Thiebes**, E. Grumstrup

**8:20 80.** Development and applications of modular pH-responsive linkers for controlled release. **E. Savoy**, F.P. Olatunji, C. Lovingier, C.E. Berkman

**8:40 81.** Mechanisms of organosilica nanoparticle formation. **S. Curry**, I. Zharov

**9:00 82.** Elucidating the impact of organic structure directing agent isomer on the aluminum distribution and copper siting of SSZ-39. **C. Umhey**, J. McEwen, D.F. Shantz, J. Guo, A. Kulkarni, Z. Cui

**9:20 83.** Stimulated Raman activated cell sorting. **J. Theisen**, E. Grumstrup, M. Neubauer, A. Kohtz, S. Warnat, R. Hatzenpichler

**9:40** Intermission.

**10:00 84.** Synthetic control of phosphorus allotropes in phosphorus-carbon composite materials for lithium-ion batteries. **I.P. Gordon**, L. Piveteau, S. Randak, N.P. Stadie

**10:40 85.** Modulation of post-transcriptional processing affects infectious titer of lentiviral vectors in transiently-transfected human embryonic kidney cells. **N. Mier**, D.K. Roper



**11:20 86.** Direct air carbon capture using peroxovanadate and uranyl peroxide complexes. **Z. Mao**, E. Garrido Ribo, M.D. Nyman

### **Honoring Joan Broderick I**

J. DuBois, *Organizer*

B. Balci, *Presiding*

Norm Asbjornson Hall  
Inspiration Hall

**8:00** Opening Remarks.

**8:20 87.** Nitrogenase: Roles of the components and environment of the catalytic FeMo-cofactor. **B.M. Hoffman**

**9:00 88.** Transition metal signaling and metalloallostery: Bioinorganic chemistry beyond active sites. **C.J. Chang**

**9:40** Intermission.

**10:00 89.** [FeFe]-hydrogenase maturation: New insights into biosynthesis of the DTMA ligand. **W.E. Broderick**, A. Pagnier, B. Balci, E.M. Shepard, R.D. O'Neill, A. Marlott, M.T. Mock, J.B. Broderick

**10:30 90.** Iron-sulfur cluster trafficking and iron regulation in fungal pathogens. **C.E. Outten**

**11:00 91.** Conformational control for biomimetic energy transduction. **L. Olshansky**

**11:30 92.** Biohybrid photosynthetic charge accumulation. **L.M. Utschig-Johnson**, K.L. Mulfort, J. Niklas, O. Poluektov

## Synthetic Methods and Reaction Discovery

T. Livinghouse, *Organizer, Presiding*

Strand Union Building  
Ballroom C

**8:00 100.** Functionalization of  $\alpha,\alpha$ -difluoromethylarenes via base-promoted halogen-transfer methodology. **L. Hooker**, N. Coradi, J. Bandar

**8:20 101.** On the copper(I) catalyzed cross-coupling of 1-bromoalkynes with N-heterocyclic organozinc reagents. **C. Frabitore**

**8:40 102.** On the base-catalyzed phenol-Mannich condensation of preformed cesium iminodiacetate. The direct synthesis of Calcein blue AM and related acyloxymethyl esters. **L. Mikesell**, T. Livinghouse

**9:00 103.** Structure-property relationships in dissociative guanidine-based covalent adaptable networks. **M. Larsen**

**9:20 104.** Postpolymerization modification by nucleophilic addition to styrenic carbodiimides. **C. Klingler**, K. McConnell, H. Houck, M. Larsen

**9:40** Intermission.

**10:00 105.** Development and applications of new synthetic strategies for polymer science. **B.P. Fors**

**10:40 106.** Halogen bonding catalysis improved with intramolecular hydrogen bonds. **O.B. Berryman**

**11:20 107.** DPDTC: A reagent for green activation and derivatization of carboxylic acids. **D.M. Fialho**

## THURSDAY AFTERNOON

### Analytical and Environmental Chemistry

R. Hatzenpichler, *Organizer*

L. Hu, *Organizer, Presiding*

Strand Union Building

SUB 233

**2:00 146.** “Leaky” pellet stoves as a source of indoor volatile organic compounds. **D.T. Ketcherside**, L. Hu, R.J. Yokelson, V. Selimovic, A. Science Team

**2:20 147.** Investigating the quality of biodiesel synthesized from used cooking oils. **N. Nune**

**2:40 148.** Autonomous in situ measurements of freshwater alkalinity. **Q. Shangguan**, C. Lai, C. Beatty, Y. Fischer, R. Spaulding, M.D. Degrandpre

**3:00 149.** Detection of pertechnetate using square wave anodic stripping voltammetry on carbon-based electrodes. **J.M. Rakos**, S. Kazemeini, D. Weber, N. Baule, C. Rusinek

**3:20 150.** Constraining and improving the representation of VOCs from biomass burning with field observations. **L. Jin**

**3:40** Intermission.

**4:00 151.** What do disinfectants and wildfire smoke have in common? Volatile organic compounds indoors and outdoors. **N. Johnston**, W. Bruchard, G. Dickinson, D. Kenerson, D. Miller

**4:40 152.** Implementing tetraperoxovanadates as direct air carbon capture materials. **E. Garrido Ribo**

**5:20 153.** Understanding the emissions and chemistry of formic and acetic acid in western U.S. wildfire smoke: Insights from the WE-CAN and FIREX-AQ field campaigns. **W. Permar**, C. Wielgasz, L. Jin, D.T. Ketcherside, R. Yokelson, L. Hu

## Frontiers in Materials Chemistry

E. Grumstrup, *Organizer*

R. LaDouceur, *Presiding*

Norm Asbjornson Hall

NAH 137

**2:00 154.** Influence of hydrogen content on rare earth fluorescence in lithium niobate. **S. Rehbein**, T. Rust, M. Dixon, R. Cone, C. Thiel

**2:20 155.** Withdrawn

**2:40 156.** Hydrogen-type binding sites in carbonaceous electrodes for rapid lithium insertion. **D. McGlamery**, C. McDaniel, W. Xu, N.P. Stadie

**3:00 157.** Inverse type-I ZnSe/InP structured nanocrystals used for photon upconversion. **P. Jaimes**, T. Miyashita, K. Wang, T. Qiao, M.L. Tang

**3:20 158.** Influence of carbon dot on photovoltaic performance of n-TiO<sub>2</sub>/p-NiO heterojunction nanocomposites in dye-sensitized solar cells. **T.F. Yadeta**, I. Toyoko

**3:40** Intermission.

**4:00 159.** Applying  $\pi$ -philiic pyrene-MOFs to concentrate natural antioxidants found in berry leaves. **T. Hurley**

**4:20 160.** Improved catalysis and thermal stability in the small pore environment of SBA-15 supported gold catalysts prepared with reversible ionic liquids (RevILs). **Z. Sun**

**4:40 161.** Preparation and characterization of hydrazide-containing metallogels. **J.L. Crane**

**5:20 162.** Thermogenic Cement (TGC) for thermal energy storage. **C. Riddle**, J. McNally, D. Baerwaldt, S. Kimuyu

## Honoring Joan Broderick II

J. DuBois, *Organizer*

E. Dieter, *Presiding*

Norm Asbjornson Hall

Inspiration Hall

**2:00 166.** How glyceryl radical enzymes functionalize hydrocarbons. M.C. Andorfer, D.T. King-Roberts, C.N. Imrich, B.G. Broderidge, **C.L. Drennan**

**2:40 163.** Spectroscopy, enzymology and electrochemistry of the bacterial cytochrome c peroxidase superfamily: a tribute to Professor Joan Broderick. **S.J. Elliott**

**3:20** Intermission.

**3:40 164.** A role for the monothiol glutaredoxin GrxD in Fe-S cluster storage and trafficking in *Escherichia coli*. **F. Outten**

**4:10 .** Quantitative Inorganic Phenotypes in Reproduction and Cancer Cell Biology. **T.V. O'Halloran**

**4:40 165.** Synthetic biology approaches to new chemistry. **M. Chang**

**5:10 167.** Biosynthesis of lipoic acid: A saga of death, destruction, and rebirth. **S.J. Booker**

**5:40** Closing Remarks.

## NeXus: Generation and Applications of Quantum States of Light

N. Borys, *Organizer, Presiding*

Strand Union Building

Ballroom D

**2:00 168.** Dynamic control of excitons in single-layer WSe<sub>2</sub> with surface acoustic waves. **S. Parvez**, S. Berweger, N.J. Borys

**2:20 169.** Fabrication of embedded plasmonic micropillars for nano-optomechanics and quantum light emission with 2D materials. **J. Stage**, W. Nakagawa, A. Lingley, N. Borys

**2:40 170.** Using nano-photoluminescence to determine the homogeneity of an excitonic moire superlattice. **T. Faltermeier**, J. Stage, J.P. Fix, N. Borys

**3:00 171.** Substrate induced effects on the dynamics of quantum light emitters in 2D semiconductors. **M. Strasbourg**, E. Yanev, S. Parvez, T. Darlington, J.C. Hone, P.J. Schuck, N. Borys

**3:20 172.** Quantum advantage in two-photon absorption: Theoretical investigations of molecules and materials. **E. Wittkop**

**3:40** Intermission.

**4:00 173.** Tensile-strained self-assembly: Nanoscale stretching for novel quantum light sources. **P. Simmonds**

**4:40 174.** Single photon emitting defects in hexagonal boron nitride. **S. Behura**

**5:20 175.** Engineering, control, and integration of 2D-material based quantum defects for integrated quantum photonics. **K. Parto**, G. Moody

## **Organic Process Chemistry: From Bench to Manufacturing**

A. Das, *Organizer, Presiding*

Strand Union Building  
Ballroom C

**2:00 176.** Axially chiral cannabinoids: Design, synthesis, and cannabinoid receptor affinity. **S.E. Kearney**, A. Gangano, P. Navaratne, D. Barrus, K. Rehrauer, T. Reid, A.E. Roitberg, I. Ghiviriga, C.W. Cunningham, T. Gamage, A.J. Grenning

**2:40 177.** Advancing process understanding: Kinetic analysis of complex organic transformations. **J.I. Murray**

**3:20 178.** Using flow chemistry to develop highly selective and sustainable synthesis of Flavanone derivatives. **R. Merugu**

**3:40** Intermission.

**4:00 179.** Fit-for-purpose synthesis of CDK2 inhibitor GNE-140. **A. Ambrosi**, K.A. Piechowicz, T. Tuck, D. Xu, H. Zhang, F. Gosselin

**4:40 180.** Scientific innovation for greener manufacturing at Merck. **S. Dalby**

**5:20 181.** Developing a versatile contrathermal Cope rearrangement platform for enantioselective synthesis. **A.J. Grenning**

### **Undergraduate Poster Session**

M. T. Mock, *Organizer*

**12:00 - 2:00**

Strand Union Building  
Ballroom AB

**108.** Developing novel probes for optical on-line monitoring. **N.T. Boily**, H. Felmy, A. Schafer Medina, S.A. Bryan, A. Lines

**109.** Orthotrichem lyellii as a bioindicator for airborne trace metal contamination in the South Puget Sound region. M. Inomoto, **R.J. Bond**, G.E. Oseguera, K. Mesta

**110.** Using DFT methods to make biomimetic influenced changes to the NiFe-hydrogenase enzyme. **E. Bruch**, M.E. McGreal

**111.** Expression, isolation, purification, and characterization of galectin 3 and domains. **J.F. Cambria**, J. Inman, E. Reicks, A. Charbonneau, M. Lawrence, M. Cloninger

**112.** Tuning sodium-manganese-magnesium oxide (NMM) cathodes for sodium-ion batteries. **S. Cochella**, J. Greene, C. McDaniel, N.P. Stadie

**113.** Rapid synthesis of N-[1-(4-trifluoromethylphenyl)ethyl]formamide. **H. Elshanbary**, L.I. Bobyleva, M.M. Bobylev

**114.** Comparisons of per and poly fluoroalkyl substances (PFAS) levels in varying degrees of food processing. **J. Ferrill**, L.A. Hoferkamp, P.L. Tomco, B. Woodruff

**115.** Computational and synthetic approaches to improve small molecule cytokine inhibitors: a new hope for metastatic breast cancer patients. **C. Fischer**, **V. Sutharsan**, A. Feci, G. Miles, A. Tran, S. Bones, D.L. Warner, L. Warner, C. Jorcyk

**116.** Characterization of a FeoC-like protein in Methanococcus voltae. **J. Green**, E. Dieter, J.B. Broderick, W.E. Broderick

**117.** Effect of particle size on Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> sodium-ion cathode operation. **J. Greene**, C. McDaniel, N.P. Stadie

- 118.** Community-based air sensor network on the flathead reservation & carcinogen detection on air filter materials. **A. Hall**, N. Brown, C. Comstock
- 119.** Biofilm growth inhibition sensitivity to carbon infiltrated nanotube diameter. L.C. Bowden, J. Wells, **I. Harriman**, A.E. Bowden, B.K. Berges, B.D. Jensen, J. Bowden
- 120.** Expression, isolation, purification, and characterization of galectins 7 and 8. **J. Inman**, J. Cambria, E. Reicks, A. Charbonneau, M. Lawrence, M. Cloninger
- 121.** Nuclear DFT structure calculations of compound nuclear reactions for super-heavy elements synthesis. **J. Jaffe**
- 122.** Evaluation of chemical and morphological changes in Ni-BZY under a hydrogen atmosphere. F. Morrow, A. Hadi, **J. Kirtley**
- 123.** Investigation of the changes in cottonwood biochar before and after gasification. T. McCurdy, J. Muretta, **J. Kirtley**
- 124.** Measurements of the entropy of lithiation of graphite using a non-isothermal cell. **E.A. Kraska**, N.P. Stadie
- 125.** Probing the mechanism of DNA-protein crosslink formation facilitated by aziridinomitosenes with varying substitution patterns. **M.S. Lindley**, D.I. Ali, M.A. Blair, D.L. Warner
- 126.** Synthesis of diphenylanthracene isomers to investigate triplet-triplet annihilation (TTA) during photon upconversion. **A. Mardini**, T. Miyashita, P. Jaimes, M. Fumanal, M.L. Tang
- 127.** Synthesis of a merocyanine dye to tune custom-built femtosecond circular dichroism spectrometer for quantum beats detection. **M. Martin**, M. Lindley, D. Turner, k. Duncan, D.L. Warner, O. Mass
- 128.** Rapid synthesis of N-[1-(2,5-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide. **A. Neumiller**, L.I. Bobyleva, M.M. Bobylev
- 129.** Gas flow rates and sample position effects on carbon nanotube growth. **G. Ogilvie**, **I. Harriman**, J. Bowden, A.E. Bowden, B.D. Jensen
- 130.** Rapid synthesis of N-methyl-N-[1-(4-trifluoromethylphenyl)ethyl]formamide. **B. Pelzer**, L.I. Bobyleva, M.M. Bobylev
- 131.** Cryo-EM studies of a putative encapsulin from *Sulfolobus solfataricus*. **J. Petersen**, A. Charbonneau, B. Bothner, M. Lawrence
- 132.** Mining separations data for safe storage of nuclear waste. **E. Phan**, C. Lao, A. Chemey



- 133.** Pulsed-field gradient NMR studies of ion mobility in carbonate-based battery electrolytes. **S. Posey**, C. Welty, B. Tripet, N.P. Stadie
- 134.** Biofilm prevention using carbon infiltrated nanotubes on metal surfaces. **J. Rammell**, **J. Williams**, I. Harriman, J. Bowden
- 135.** Effects of ball-milling and calendaring on the electrochemistry of lithium iron phosphate as a lithium-ion cathode material. **S. Romero**, C. Welty, N.P. Stadie
- 136.** Rapid synthesis of N-ethyl-N-[1-(2-naphthyl)ethyl]formamide. **C.M. Scott**, L.I. Bobyleva, M.M. Bobylev
- 137.** Formaldehyde analysis of ambient air in the Lewis-Clark Valley, Idaho. **C. Sia**, N. Johnston
- 138.** Rapid synthesis of N-[1-(3,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamid. **R. Swartwout**, L.I. Bobyleva, M.M. Bobylev
- 139.** Rapid synthesis of N-[1-(3,5-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide. **T.L. Trotter**, L.I. Bobyleva, M.M. Bobylev
- 140.** Synthesis of viscoelastic supramolecular diguanidine networks. **O. Venablerose**, E. Van Pelt, M. Larsen
- 141.** Rapid synthesis of N-ethyl-N-[1-(4-trifluoromethylphenyl)ethyl]formamide. **L. Vick**, L.I. Bobyleva, M.M. Bobylev
- 142.** Withdrawn
- 143.** Development of a live fricke dosimeter based on the Ferric/Ferrous redox couple. **C. Warren**
- 144.** DFT band structures of metal hexaborides for radioactive waste material storage. **H. White**
- 145.** Dendrimer PSMA-targeted drug delivery to reverse multidrug resistance phenomenon in prostate cancer cells. **S. Xaivong**, A. Sharma, A. Pulukuri

## FRIDAY MORNING

### Frontiers in Inorganic Chemistry

C. Lemon, *Organizer, Presiding*

Norm Asbjornson Hall  
Inspiration Hall

**8:00 218.** Characterization of a methanogen radical SAM/SPASM domain enzyme. **E. Dieter**, J. Green, W. Broderick, J.B. Broderick

**8:20 220.** Development of Cr complexes bearing anionic pincer ligands for N<sub>2</sub> reduction and NH<sub>3</sub> oxidation. **O. Duletski**

**8:40 2** Ultrafast Excited State Dynamics of PCN-222 MOF. **Sajia Afrin**, Xiaozhou Yang, Amanda Morris, Erik Grumstrup

**9:00** Principles and applications of selective recognition of lanthanides in biology. **J.Cotruvo.**

**9:40** Intermission

**10:00 222.** Opportunities and obstacles for In crystallo organometallic chemistry. **D. Powers**

**10:40 223.** Connecting molecular electronic structure and electron spin relaxation for quantum information science. **R.G. Hadt**

**11:20 224.** Design and synthesis of porous salts. **E.D. Bloch**

### Workforce Development in Nuclear and Non-Proliferation Applications I

A. Lines, *Organizer*  
H. Felmy, H. Lackey, *Presiding*

Strand Union Building  
SUB 233

**8:00 225.** Athena- stewarding nuclear material processing of irradiated fuel for the nonproliferation community. **B.N. Seiner**, G.J. Lumetta, K. Lyon, H. Eldridge, C. Pereira

**8:20 226.** Integrating optical spectroscopy-based online monitoring; empowering knowledge transfer and improved processing in the nuclear industry. **A. Lines**, H. Felmy, H. Lackey, S.D. Branch, A. Schafer Medina, S.A. Bryan

**8:40 227.** Optical spectroscopy-based online monitoring of nuclear material processing streams. **H. Felmy**, H. Lackey, N.P. Bessen, S.A. Bryan, A. Lines

**9:00 228.** Chemometrics for qualitative and quantitative analysis of PUREX type extractions on the milli- and microliter scale. **H. Lackey**, G. Nelson, H. Felmy, A. Lines, S.A. Bryan

**9:20 229.** Experiential learning that ‘goes nuclear’. **G. Nelson**, A. Lines, S.A. Bryan

**9:40** Intermission.

**10:00 230.** Spectroscopic online monitoring for process control of nuclear reprocessing streams. **S. Uba**, R. Lascola, M. Thomas, P. O'Rourke

**10:20 231.** Plutonium oxide processing capability development. **F. Heller**, R.A. Clark, C.M. Parker, I.J. Schwerdt, J.M. Lonergan, J.F. Corbey, M.K. Edwards, K. Pellegrini, J.C. Carter, J.M. Tingey, L.E. Sweet, B.M. Rapko, B. McNamara, G.J. Lumetta, D.E. Meier

**10:40 232.** Withdrawn

**11:00 233.** Understanding thermochemistry of La and U mixing in chloride molten salt. V.G. Goncharov, **B. Merrill**, W. Smith, Z. Liu, A. Clark, X. Guo

### **Bringing Molecules Together: Noncovalent Interactions**

O. B. Berryman, *Organizer, Presiding*

Strand Union Building  
Ballroom C

**8:00 182.** Bringing microcrystal electron diffraction (MicroED) to the Northwest: An overview of MicroED and showcase of recent small molecule structure elucidations. **D. Decato**

**8:20 183.** New foldamer molecules exploring the role of charge in the hydrogen bond enhanced halogen bond. **S. Helsley**, E.A. John, C.J. Massena, O.B. Berryman

**8:40 184.** The interplay between hydrogen and halogen bonding: Substituent effects and their role in the hydrogen bond enhanced halogen bond. **J. Sun**, D. Decato, V. Bryantsev, O.B. Berryman

**9:00 185.** Novel Mincle-specific trehalose derivatives as vaccine adjuvants. **A. Riel**, D. You, L. Hicks, J. Evans, K. Ryter

**9:40** Intermission.

**10:00 186.** Chelate forming antimicrobial conjugates for the control of biofilm-forming bacteria. **T. Livinghouse**

**10:40 187.** Effect of structural modifications on the non-covalent and bulk interactions of C<sub>3</sub>-symmetric naphthalene diimides. **B. Narayan**, S. George

**11:20 188.** Redox-active azothioformamide ligands: Coordination complexes for copper(I) catalysis. **K.V. Waynant**, R. pradhan, L. Tiwari, E.B. Hulley

### **Chemical Education: Practice and Theory**

M. Queen, *Organizer, Presiding*

Strand Union Building  
SUB 235

**8:00 189.** Eighty percent at eight am... using in-class student personal response systems to enhance attendance and retention in general chemistry. **C.W. Mc Laughlin**

**8:40 190.** Examining the qualitative factors used to describe course inclusivity in General Chemistry. **V. Bustamante**

**9:00 191.** The atomic circus experience; How to curb misconceptions while getting people hyped about science. **M. Queen**, A. Obery

**9:40** Intermission.

**10:00 192.** Development and assessing the impact of several green chemistry instructional modules. **A. Leontyev**

**10:40 193.** Using mindset and motivation to improve student success and attitudes about chemistry. **A. Graham**

**11:20 194.** Peer-led discussions as the foundation of an on-line, synchronous special topics course focused on SARS-CoV-2. **J.S. Shumaker-Parry**

## Chemical Insights into Biology

M. Cloninger, *Organizer, Presiding*

Norm Asbjornson Hall  
NAH 165

**8:00 195.** Preparation of a customizable ligand functionalized chitin biopolymer adsorbents utilizing the azide-alkyne click reaction. **B. Berrington**

**8:20 196.** Dendrimer nanomedicines for the treatment of acute liver injury. **A. Sharma**, J. Porterfield, R. Sharma, S. Kannan, K. Rangaramanujam

**8:40 197.** Using glycodendrimers to study galectin-mediated cancer cellular processes. M.S. Fricke, R. Tahir, J. Cambria, E. Reicks, J. Inman, **M. Cloninger**

**9:00 198.** Affinity-based biomaterials for modulating protein delivery for tissue repair. **M.H. Hettiaratchi**

**9:40** Intermission.

**10:00 199.** Responsive nanoporous materials from “hairy” nanoparticles. **I. Zharov**

**10:40 200.** Informed design of silicone-enhanced polymer systems: Chemical insights & applications. **S. Mangold**

**11:20 201.** A protein-polymer platform for 3D printing engineered living materials. **A. Nelson**

## Computational and Theoretical Chemistry

M. Mosquera, *Organizer, Presiding*

Strand Union Building  
Ballroom D

**8:00 202.** Probing the chemical role of water in enzymes. **C.M. Sindic**, P.R. Callis

**8:20 203.** Elucidating the effects of oxygen vacancies and electric fields on the catalytic properties of La-based perovskites. **A. Whitten**, J. McEwen, E. Nikolla, R. Denecke

**8:40 204.** Quantifying coverage effects of 2,3-butanediol on RuO<sub>2</sub> from first principles. **C. Moore**, J. McEwen

**9:00 205.** Twisting bilayer van der Waals structures towards two-dimensional ferroics and multiferroics. **J.M. Marmolejo-Tejada**, S. Barraza-Lopez, M. Mosquera

**9:20 206.** Accurate modeling of charge transfer processes with electronic structure theory. **S. Chaudhuri**, G.C. Schatz

**9:40** Intermission.

**10:00 207.** Eigenstates from quantum dynamics simulations on quantum computers. **M.B. Soley**, B. Allen, V.S. Batista

**10:40 208.** Excited-state energy transport under strong light-matter interactions. **R. Ribeiro**

**11:20 209.** Quantum chemistry for coarse-grained soft materials. **N. Jackson**

## **Environmental and Biological Applications of Mass Spectrometry**

D. Smith, *Organizer, Presiding*

Norm Asbjornson Hall  
NAH 137

**8:00 210.** Montana State mass spectrometry. **D.F. Smith**

**8:20 211.** Technology developments to expand the utility of FTMS imaging in interdisciplinary studies. **F. Leach III**

**9:00 212.** Proteome-wide size exclusion-ICPMS analysis of native metalloprotein complexes in bacteria and archaea. **J. Larson**, M. Tokmina-Lukaszewska, H. Fausset, G. Cooper, S. Spurzem, S. Cox, R. Spietz, B. Brekke, J. Pauley, E. Boyd, B. Bothner

**9:20 213.** Metabolic phenotypes reflect patient sex and injury status: A cross-sectional analysis. **H. Welhaven**, A. Welfley, P. Pershad, J. Satalich, R. O'Connell, A. Vap, B. Bothner, R. June

**9:40** Intermission.

**10:00 214.** Effect of exercise on disrupted circadian rhythm in mice. **E. Schmitt**, N. Marcello, D. Smith, H. Welhaven, W. Todd

**10:40 215.** Mass spectrometry based metabolomic applications investigating the interaction between the gut microbiome and neurological health. **K. Steward**

**11:20 216.** Quantifying volatile organic compounds from volatile chemical products using photon transfer reaction mass spectrometry. **L. Tan**, D.T. Ketcherside, L. Hu

**11:40 217.** Impact of wildfire smoke on volatile organic compounds: Results from the SAMOZA field campaign in Salt Lake City. **E. Cope**, D.T. Ketcherside, S. Lyman, D. Jaffe, L. Hu

## FRIDAY AFTERNOON

### Workforce Development in Nuclear and Non-Proliferation Applications II

A. Lines, *Organizer*

C. Heathman, C. Heathman, *Presiding*

Strand Union Building  
SUB 233

**2:00 281.** Future workforce needs in a rapidly evolving nuclear fuel cycle. **T. Todd**

**2:20 282.** Crosscutting opportunities of nuclear chemistry, physics, and engineering in the Alchemey Lab. **A. Chemey**

**2:40 283.** Technetium-oxo speciation in organic media. **J. Bustos**, M.D. Nyman

**3:00 284.** Molten salts for advanced reactor fuels: Thermophysical properties and ceramic synthesis. **V. Augustine**, J. Blyther, T. Chen, S. Parker, A. Chemey

### Enzymes and Metalloproteins

J. DuBois, *Organizer*

V. Adedoyin, E. S. Akpoto, *Presiding*

Norm Asbjornson Hall  
NAH 165

**2:00 242.** Protein crystal structures and function. **A. Byer**

**2:20 243.** Using enzymes to remodel carbon: Capturing CO<sub>2</sub> using acetone and bacterial carboxylases. A. Nath, K. Shisler, F. Mus, B. Bothner, J. Peters, **J. DuBois**

**2:40 244.** Refining the inhibition and catalytic mechanism of formate dehydrogenase from *Rhodobacter capsulatus*. **B.R. Duffus**, H. Kumar, M. Gauglitz, K. Laun, M. Haumann, C. Teutloff, i. Zebger, S. Leimkühler

**3:00 245.** Rieske oxygenase stability: Obstacles and opportunities for the application of a plastic degrading enzyme system. **J. Lusty Beech**, A. Kumar, R. Rodrigues da Silva, A. Asundi, J. Fecko, J. DuBois, C. Tassone, R. Sarangi, N. Yennawar

**3:20 246.** Understanding the limitations of Rieske enzyme reductases. **E.S. Akpoto**, J. Lusty Beech, R. Rodrigues da Silva, J. DuBois

**3:40** Intermission.

**4:00 247.** Iron absorption by *Bacteroides thetaiotaomicron* suggests preference for heme and its intracellular accumulation. **R. Silva**, M. M. Meslé, C. R. Gray, M. Dlakić, J. DuBois

**4:20 248.** [FeFe]-Hydrogenase maturation with the defined lysate-free maturation system and insights into the DTMA ligand biosynthesis. **B. Balci**, R.D. O'Neill, E.M. Shepard, A.J. Pagnier, M.T. Mock, W.E. Broderick, J.B. Broderick

**4:40 249.** Withdrawn

### **Elevating Future Chemistry: Recent Advancements Led by Graduate Students**

Graduate Student Association-MSU, *Organizers*  
O. Duletski, *Presiding*

Strand Union Building  
SUB 235

**2:00 40.** Observing charge injection in silver-modified graphitic carbon nitride using ultrafast spectroscopic techniques. **E. Orcutt**, S. Varapragasam, E. Grumstrup

**2:20 235.** To label or not to label: What questions can lipid probes actually answer?. **J. Taylor**, J.C. Conboy

**2:40 236.** Associating morphological and chemical processes in Ni-BZY anodes with electrochemical performance of protonic-ceramic fuel cells operating with carbon-based fuels. **A. Hadi**, F. Morrow, J. Kirtley

**3:00 237.** Limitations of Langmuir theory for predicting adsorption thermodynamics: Methane on MOF-5 as a case study. **D. Compton**, N.P. Stadie



**3:20 238.** Efficient aqueous separation of tetravalent zirconium and hafnium via cluster formation and precipitation. **R.P. Loughran**, A.M. Roseborough, M.D. Nyman

**3:40** Intermission.

**4:00 239.** Effects of epitranscriptomic RNA modifications on the catalytic activity of SARS-CoV-2 replication complex. **A. Apostle**, S. Apostle, Y. Yin, K. Chillar, D.N. Eriyagama, R. Arneson, E. Burke, S. Fang, Y. Yuan

**4:40 240.** Exploring the role of zinc-zirconia mixed oxide (ZnO-ZrO<sub>2</sub>) as supports in single atom catalysis. **A. Auni**, Q. Zhang

**5:20 241.** Studies on the role of counterions in aqueous solution self-assembly of polyoxopalladate. **D. Stephen**, M.D. Nyman

## **New Frontiers in Optical Spectroscopy and Imaging**

R. A. Walker, *Organizer, Presiding*

Strand Union Building  
Ballroom D

**2:00 250.** Investigating the triplet-triplet annihilation efficiency and the spin statistical factor of diphenylanthracene isomers. **T. Miyashita**, P. Jaimes, A. Mardini, M. Fumanal, M.L. Tang

**2:20 251.** Enhancing long range order in Perylene Diimide aggregates encourages the formation of long-lived charge separated states through early excited state delocalization. **S.R. Hollinbeck**, E. Grumstrup, J. Olivier, K. Liu

**2:40 252.** Investigating stacking/unstacking of a fluorescent base analog - 2-AP dinucleotide through fluorescence detected circular dichroism. **J. Hoehner**, T. Coulson

**3:00 253.** Effect of calcium on phosphatidylserine packing and flip-flop kinetics. **P. Hymas**, J.C. Conboy

**3:20 254.** Time resolved emission studies of amino acid partitioning into model biological membranes. **R. Trousdale**, k. Duncan, R.A. Walker

**3:40** Intermission.

**4:00 255.** Porphyrin – RSAD1 interaction studied by time-resolved fluorescence and two-photon absorption spectroscopy. **O.A. Zadvornyy**, M. Drobizhev, W.E. Broderick, J.B. Broderick

**4:40 256.** Electronic structure and excited-state dynamics of DNA-templated monomers and aggregates of asymmetric polymethine dyes. **K. Duncan**, H. Byers, M. Houdek, S. Roy, A. Biaggne, M. Barclay, L. Patten, J. Huff, D. Kellis, C. Wilson, J. Lee, P. Davis, O. Mass, L. Li, D. Turner, J. Hall, W. Knowlton, B. Yurke, R.D. Pensack

**5:20 257.** Exploring lipid selectivity of a cell penetrating peptide with sum frequency generation spectroscopy. **J.D. Cyran**

## **Porous Framework Materials and Applications**

N. P. Stadie, *Organizer, Presiding*

Norm Asbjornson Hall  
Inspiration Hall

**2:00 258.** Negative thermal expansion in porous framework solids and the role of adsorbed fluids. **E.U. Osuagwu**, N.A. Strange, N.P. Stadie

**2:20 259.** Biochar as a hydrogen fuel source for PCFCs. **J. Muretta**, T. McCurdy, J. Kirtley

**2:40 260.** Robust soc-MOF platforms exhibiting high gravimetric uptake and volumetric deliverable capacity for on-board methane storage. **G. Vrma**, S. Kumar, S. Ma

**3:00 261.** Hierarchically porous metal–organic frameworks: A versatile platform for catalysis. **Q. Zhang**

**3:20 262.** Bismuth-oxo clusters, coordination polymers and frameworks. **M.D. Nyman**

**3:40** Intermission.

**4:00 263.** Conductivity and dynamic bonding in nanoscale MOFs. **C. Brozek**, J. Huang, C. Marshall, K. Fabrizio

**4:40 264.** Conjugated metal–organic nanostructures: Exploring new dimensions. L. Zasada, A. Kamin, K. Snook, P. Le, **D.J. Xiao**

**5:20 265.** Designing dual-functional metal-organic frameworks for photocatalysis. **K.C. Stylianou**

## Structural Biology

M. Lawrence, *Organizer, Presiding*

Norm Asbjornson Hall  
NAH 137

**2:00** Setup.

**2:20 266.** Regulation of Ric-8A guanine nucleotide exchange activity by neuronal calcium sensor-1. **L. McClelland**, S. Sprang

**2:40 267.** Effect of interdomain interactions on the structure and stability of the eleventh type 3 domain from human fibronectin. **P. Nepomuceno**, T. Mou, B.E. Bowler, S.R. Sprang, K. Briknarová

**3:00 268.** Cyclic tetra-adenylate (cA<sub>4</sub>) recognition by Csa3a; implications for an integrated Class 1 CRISPR-Cas immune response in *Saccharolobus solfataricus*. **A.A. Charbonneau**, D.M. Eckert, C. Gauvin, N.G. Lintner, M. Lawrence

**3:20 269.** The structure of Cowpea Chlorotic Mottle Virus determined by cryo-electron microscopy single particle analysis. **A.L. Dang**, C. Gauvin, S. Brumfield, M. Lawrence, M. Young

**3:40** Intermission.

**4:00 270.** High resolution, high throughput cryo-electron microscopy at Montana State University. **C. Gauvin**, M. Lawrence

**4:40 271.** Precise genomic integration of foreign DNA in CRISPR-Cas adaptive immunity. **W. Henriques**, A. Santiago-Francos, L. Hall, C. Gauvin, M. Lawrence, E. Eng, B. Wiedenheft

**5:20 272.** Structure of ribosome silencing factor S bound to the 50S ribosomal subunit from *Pseudomonas aeruginosa*. **J.L. Findlay**, C. Gauvin, M. Kanik, K.S. Williamson, C.M. Lawrence, M.J. Franklin

## Transition Metal Catalysis

S. R. Neufeldt, *Organizer, Presiding*

Strand Union Building  
Ballroom C

**2:00 273.** Triflate-selective Suzuki cross-coupling of chloro- and bromoaryl triflates under ligand-free conditions. **G.M. Ibsen**, V.H. Menezes Da Silva, J.C. Pettigrew, S.R. Neufeldt

**2:20 274.** Investigation of localized quantum dot-like states in single-layer WS<sub>2</sub> on a gold surface. **M. Soroush**, K. Jo, E. Yanev, P.J. Schuck, N.J. Borys

**2:40 275.** C2 Site-selective cross-coupling of 2,4-dihalopyrimidines. **O. Jackson**, C. Stein, A. Reyes, S.R. Neufeldt

**3:00 276.** Catalytic ammonia oxidation using nickel complexes. **D. Stephens**, R.K. Szilagyi, M.T. Mock

**3:20 277.** Significance and origin of divergent mechanisms for oxidative addition of aryl electrophiles at palladium(0). **M. Kania**, A. Reyes, S.R. Neufeldt

**3:40** Intermission.

**4:00 278.** Heterocycle synthesis through aryne intermediates. **C. Roberts**

**4:40 279.** Alkene functionalization using homogeneous and heterogeneous catalysts. **A.K. Cook**

**5:20 280.** MicroED characterization of small molecules and selective bond forming reactions of sp-hybridized carbocations. **H. Nelson**