

Technical Program

RMRM 2021

Hosted by the Southern Arizona Local Section

Will be held on October 20-23, 2021

John Jewett, Iman Daryaei, *Program Chairs*

Laura Stratton, Charles Weidner, *General Chairs*

THURSDAY MORNING

Ventana

Polymers and Materials

Session A

Cosponsored by POLY
Y. Yang, *Presiding*

8:00 Introductory Remarks.

8:05 . Withdrawn Aging study of thermoplastic polyurethanes (TPUs). **D. Yang,**
A.S. Edgar, J. Brett, C. Wong

8:30 . Streamlined approach for the synthesis of cyclic carbonates. **J. Hedrick**

8:55 . Withdrawn Further evaluation of the physical behavior of bis-2,2-
dinitropropyl acetal and bis-2,2-dinitropropyl formal. **A.S. Edgar,** C. Wong, D. Yang

9:20 . Chalcogenide hybrid inorganic/organic polymers (CHIPs): A new class of
polyurethane for enhanced mechanical and flame retardant properties. **K. Kang,** J.
Pyun

Polymers and Materials

Session B

Cosponsored by POLY

Y. Yang, *Presiding*

10:15 . Novel tamper-indicating materials. **W.C. Corbin**, M. Humphries, H. Smartt

10:40 . Development of a universal organic electrochemical transistor (OECT) platform towards biosensing. **S. Yu**, J. Harris, E.L. Ratcliff

11:05 . Elucidating ion interactions in oxidized organic semiconductors for use in organic electrochemical transistors. **S. Yeager**, L. Du, J. Harris, E. Ratcliff

11:25 . Conductive and malleable solid state polymer electrolytes with a triazine hyperbranching polymer host. **M. Bolar**, C.C. Browder

Copper

Chemical Education

Chemistry Education: Challenges and Promising Practices

Cosponsored by CHED

V. Talanquer, *Presiding*

8:00 Introductory Remarks.

8:05 . Using free electron lasers to understand membrane protein dynamics. **M.C. PERERA**, T. Grant, L. Salas-Estrada, A.V. Struts, U. Chawla, S. Fried, N. Weerasinghe, K. Karpos, D. Meza, N. Zatsepin, A. Grossfield, D. Mendez, P. Fromme, R. Kirian, M.F. Brown

8:30 . Student voices and faculty opinion regarding equity in the chemistry instruction. **A. Margiotta**, C.E. Brown

8:55 . Exploring gender and ethnicity performance gaps in a traditional and reformed general chemistry course. **J. Tashiro**, V. Talanquer

9:20 . Designing a hybrid culturally-relevant STEM research program for Native American students. **K.S. Headon**

9:45 Intermission.

10:15 Introductory Remarks.

10:20 . Chemistry teaching careers in secondary school: Do you know the facts in the Rocky Mountain region?. T.M. Chambers, J. Breakall, E.C. Gravely, W. Hunter, **J.B. Nielson**, E.J. Yeziarski

10:45 . Educational escape rooms: Teaching and reinforcing chemical concepts. **P. McBride**

11:10 . Embedding introductory research and problem-solving skills in the chemistry first-year seminar curriculum. **C.J. Olivo-Delgado**

Canyon A

Viruses & viral-like particles

N. Lee, *Presiding*

8:00 Introductory Remarks.

8:05 . The race to high quality oligonucleotide chemistry. **M. Blanco**

8:30 . Oncolytic virotherapy by metal complexes: Vanadium compounds. **D.C. Crans**

8:55 . The effects of palmitoylation on the stability of envelope protein pentamer in SARS-CoV-2. **s. sun**, C. Karki, L. Li

9:20 . Methamphetamine hapten conjugated peptide vaccines to combat addiction. **J. Genchev**, N. Lee

9:45 Break.

10:20 . Building science self-efficacy in students without laboratory and research experience to successfully produce virus-like particles (VLPs). **M. Proctor**

10:45 . Preparation of apolipoprotein-C I (ApoC1) peptide antigens for display on virus-like particles to combat adenocarcinoma. **K. Acothley**

11:10 . Study electrostatic features of SARS-CoV-2 N proteins and RNAs. **W. Guo**,
L. Li

Canyon B

Computation Chemistry: In silico in the Copper State

Financially supported by Gaussian
J. Lee, *Presiding*

8:00 Introduction.

8:05 . What is the shape of a potato? Characterizing amorphous shapes. **C. Gale**, M.
Derakhshani-Molayousefi, N.E. Levinger

8:25 . Quantum mechanical and molecular dynamics simulations of rotation energetics of a full-retinylidene system using novel force fields. **A. Erly**, J. Kuan, N. Kuo, F.T. Doole, D. Nikolaev, M. Ryazantsev, A.V. Struts, M.F. Brown

8:45 . Lipid droplets under starvation conditions: A molecular dynamics exploration of the physical properties behind protein recruitment. **R.J. Braun**, J.M. Swanson

9:05 . Utilizing metadynamics and transition path sampling to develop a molecular understanding of cardiac muscle. **A.P. Baldo**, S.D. Schwartz, J.C. Tardiff

Canyon B

Biochemistry

Computational Biochemistry

Y. Xie, *Presiding*

10:15 Introductory Remarks.

10:20 . Computational study on the electrostatic interactions between uracil-DNA glycosylase (UDG) and DNA. **Y. Xie**, C. Karki, J. Chen, L. Li

10:45 . Developing and utilizing a multiscale computational approach to study molecular motors' motility. Y. Xie, **L. Li**

11:10 . Electrospun wound healing devices containing antimicrobial eutectic solvents resist biofouling by microbial pathogens. **M.A. Nguyen**, T.A. Bardsley, A.M. Whitaker, B. Padilla, R.E. Del Sesto, R.S. Kellar, A.T. Koppisch

11:35 . Self-assembling peptides (Q11 and KFE8) as a platform to create new HPV vaccines candidates. **C.G. Morales**

12:00 Concluding Remarks.

Canyon C

Peptides

Peptides: Design, Synthesis and Health

A. A. Fuller, H. M. Mansour, *Presiding*

8:00 Introductory Remarks.

8:05 . Macrocylic peptides: Orally bioavailable peptides for potential drug development. **J.V. Aldrich**, T. Khaliq, J. McLaughlin

8:30 . Development of peptide based vancomycin antagonists to attenuate the selection of vancomycin resistance among *Enterococci*. **R. Mull**, Y. Tal-Gan

8:55 . Advances and innovation in peptide drug delivery. **H.M. Mansour**

9:20 . PEG stapling for enhanced conformational stability within β -sheet proteins and α -helical coiled coils. **J.L. Price**

9:45 Intermission.

10:15 . Glycopeptides: Drugs for the brain from the brain. **R. Polt**

10:40 . TLC-MALDI-TOF as a platform for identifying novel, site-specific, peptide-based poly (ADP-ribose) polymerase inhibitors. S. Wallace, L. Chihab, M. Yamasaki, B. Yoshinaga, Y. Torres, D. Rideaux, Z. Javed, S. Turumella, M. Zhang, D. Lawton, A.A. Fuller, **I. Carter-O'Connell**

11:05 . Development of peptides derived from active regions of endogenous lung proteins for the treatment of infection and inflammation. **J.G. Ledford**

11:30 . Peptidomimetic macrocycle synthesis and structural evaluation. **A.A. Fuller**, S. Motevalli, J. Fettinger

AZ History Museum Auditorium

Inorganic Chemistry Research and Teaching: A Symposium in honor of Dennis L. Lichtenberger

Financially supported by Anonymous
N. E. Gruhn, *Presiding*

8:00 Introductory Remarks.

8:10 . Molecular orbitals, ionization energies, and other things I have learned from Dennis Lichtenberger. **B.E. Bursten**

8:45 . Two (or more) concurrent photocatalytic cycles for H₂ production. **A.K. Vannucci**, P.J. Ayare

9:20 . Catalyzing the hydrogen evolution reaction in neutral water with [2Fe-2S] metallopolymers. **K. Clary**, M. Karayilan, A. Gibson, K. McCleary-Petersen, R.S. Glass, J. Pyun, D.L. Lichtenberger

9:40 Intermission.

10:15 . Transition-metal bonds to lanthanides. **M.B. Hall**, X. Yang

10:50 . A photoelectron spectroscopy journey through complex chemical environments. **A.R. Head**

11:25 . Role of polymer side chains in the electrocatalytic production of hydrogen by [2Fe-2S]-metallopolymers. **M.O. Hamilton**, K. Clary, M. Karayilan, K. McCleary-Petersen, R.S. Glass, J. Pyun, D.L. Lichtenberger

THURSDAY AFTERNOON

Ventana

Polymers and Materials

Session C

Cosponsored by POLY
Y. Yang, *Presiding*

1:15 . Fused filament deposition printing using a Diels-Alder reversible thermoset: Novel isotropic 3D printable materials. **D.A. Loy**, P. Ye, K. Muralidharan, B.G. Potter

1:40 . Suspension polymerization of octadecyl acrylate powders for powder bed fusion of phase change materials. **R. Bean**, E. Wilts, C.A. Chatham, J. Pimentel, J. Sintas, C. Williams, T.E. Long

2:00 . 3D-printing of poly(arylene ether sulfone)s: Functional high-performance polymers for vat photopolymerization. **C.W. Weyhrich**, K.V. Heifferon, C.B. Arrington, J.M. Serrine, V. Meenakshisundaram, N.A. Chartrain, C. Williams, T.E. Long

2:20 . Additive manufacturing of functional polysulfone membranes for separation processes. **T.B. Telenar**, C.W. Weyhrich, H. Shokrollahzadeh Behbahani, T.E. Long, M. Green

2:40 . Application of epoxy-benzoxazine cure chemistry in FDM thermoset 3D printing. **E. Peiris**, D.A. Loy

Polymers and Materials

Session D

Cosponsored by POLY
Y. Yang, *Presiding*

3:30 . Iron carbonation process for capturing and converting CO₂. **D.A. Stone**

3:55 . Glyonic liquids: Green ionic liquids manufactured from sustainable glycolipids.
B.S. Deodhar, D.S. Knoff, M. Kim, J.E. Pemberton

4:20 . Non-isocyanate polyurethanes for thermoplastics and foams: Opportunities for green chemistry and sustainability. **J. Sintas**, J. Wolfgang, T.E. Long

4:40 . Carboxytelechelic polyethylene for design of polyamide segmented copolymers. **A.S. Arrington**, T.E. Long

Copper

Chemical Education

Chemistry Education: Learning in the Laboratory and in the Classroom

Cosponsored by CHED
V. Talanquer, *Presiding*

1:15 Introductory Remarks.

1:20 . Exploring the impact of laboratory experiment type on the nature of student argumentation. **S. Petritis**

1:45 . Teaching in context: Analyzing food in the instrumental analysis laboratory.
D.A. Belle-Oudry

2:10 . Thermochromism: Design and characterization of a thermochromic thermometer in the physical chemistry laboratory course. **B. Zacher**

2:35 . Using mind wandering as an effective intervention for creativity anxiety in introductory chemistry. **C. Kelley**

3:00 Intermission.

3:30 Introductory Remarks.

3:35 . What gets chemistry instructors to start and continue using evidence-based instructional practices. **B. Morgan**, M. Weinrich

4:00 . Using student collaboration and mindset to improve success and attitudes about chemistry in large general chemistry classes. **A. Graham**

4:25 . How students use whiteboards during collaborative activities. **M. Macrie-Shuck**, V. Talanquer

4:50 . Learning team and technology-based formative assessment strategies for large classes. **T. Hidalgo**

Canyon A

Organic Chemistry

Session A

R. Navarro, *Presiding*

1:15 Introductory Remarks.

1:20 . Protected triazabutadiene chemical probes for determining drug targets in the mosquito larval midgut. **W.N. Wijetunge**, J.C. Jewett, M. Riehle

1:45 . Synthesis and conformation of lipoquinones in model membrane systems. **M. Braasch-Turi**, J. Koehn, K. Kostenkova, D.C. Crans

2:10 . Practical synthesis of oxalyl bis(benzenesulfonylhydrazides) and related compounds. **J. Stec**, S. Xie, L. Alshukri

Organic Chemistry

Session B

R. Navarro, *Presiding*

3:30 Introductory Remarks.

3:35 . Exploiting neutral helicene radical as strong photoreductant in photoarylation reaction. **A.C. Shaikh**, T.L. Gianetti, M. HOSSAIN, R. Kaur

4:00 . Photoredox α -arylation of carbonyl compounds. **M. HOSSAIN**, A.C. Shaikh, J. Moutet, T.L. Gianetti

4:25 . Green metal-free oxidation of pyrenes: Unique applications in the synthesis of pyrene-fused pyrazaacenes.. **T. El Assaad**, D.V. McGrath

4:50 . Expanding the scope of steric influence on the oxidation and iodination of pyrene derivatives using hypervalent iodine reagents. **H. Brown**, T. El Assaad, D.V. McGrath

Canyon B

Biochemistry

Foundational Biochemistry

D. C. Crans, *Presiding*

1:15 Introductory Remarks.

1:20 . Hydration and crowding in G-protein-coupled receptor activation. **K. Hewage**, S. Fried, S. Kadinappulige, S. Hossain, D. Jurkowitz, A. Struts, S. Perera, M. Brown

1:50 . An ancestral protein tyrosine phosphatase uncovers the evolutionary origin of the PTP mechanism. **R. Shen, J.M. Denson**, D. Mitrovic, R.M. Crean, A.R. Calixto, S.C. Kamerlin, S.J. Johnson, A.C. Hengge

2:20 . Menaquinones – a versatile cofactor for the electron transport system in eubacteria and Archaea – and their interaction with membrane model systems. **D.C. Crans**, C. Van Cleave, C. Pereira, A. Goach, G.M. Arantes

2:50 Concluding Remarks.

Biochemistry

Environmental Biochemistry

M. Fox, *Presiding*

3:30 Introductory Remarks.

3:35 . Bioengineering of a haloalkane dehalogenase for the bioremediation of perfluorinated compounds. **M. Fox**

4:05 . Reduction of microbial biofouling in beer transfer lines by aqueous solutions of terpene compounds from hops. **A.T. Koppisch**

4:35 . Cellular uptake and toxicity of respirable organic uranium particulate in airway epithelial cells. **E. El Hayek**, S. Medina, J. Guo, A. Nouredine, K. Zychowski, R. Hunter, C. Velasco, M. Wiese, A. Maestas-Olguin, C. Brinker, A. Brearley, M. Spilde, T. Howard, F. Lauer, A. Ali, S. Burchiel, M. Campen, J.M. Cerrato

5:05 Concluding Remarks.

Canyon C

Quimica

Keynote Speakers

Financially supported by LSAC, ACS
C. Olivo-Delgado, *Presiding*

1:15 Introductory Remarks.

1:30 . Breast cancer in the era of COVID-19: A multidisciplinary approach from applied chemistry to social responsibility. **A. Angulo-Molina**

2:00 . Nanomaterials as a tool of choice in environmental processes and technology development. **M. Cotto-Maldonado**, F. Marquez, A. Machin

2:30 . Synthesis, characterization and exploration of potential biological activity of ferrocenyl derivatives. **I. Montes-González**

Quimica

Oral Session

Financially supported by LSAC, ACS
C. J. Olivo-Delgado, *Presiding*

3:30 Introductory Remarks.

3:35 . Calorimetric study of Cu²⁺ complex ions formation with cyclophane and its open-chain analog through isothermal titration calorimetry (ITC). **R. Sugich-Miranda**

4:00 . Quimica: The race to high quality oligonucleotide chemistry. **M. Blanco**

4:25 Concluding Remarks.

4:30 Panel Discussion.

AZ History Museum Auditorium

Inorganic Chemistry Research and Teaching: A Symposium in honor of Dennis L. Lichtenberger

Financially supported by Anonymous
J. R. Pollard, *Presiding*

1:15 . From photoelectron spectra to deaf education: An alternate journey in chemistry. **M. Lynn**

1:50 . Transformation: Inorganic chemist in an organic world. **A. Rajapakshe**

2:25 . How collaborative communities kept me sane during the pandemic. **M.A. Cranswick**

3:00 Intermission.

3:30 . United States economy and extended time to doctoral degrees. **M.T. Ashby**

4:05 . Perspective taking as a reform pathway in both chemical and general education. **J.R. Pollard**

4:40 Concluding Remarks.

Pima-Madera

Posters 1:15 – 4:00

Bioanalytical chemistry

1:15 – 4:00

1. Localization of DMSO in *Mentha x piperita* shoot tips using CARS microscopy. **H. Kreckel**, R. Bonnart, G.M. Volk, N.E. Levinger
2. Energy transfer in hybrid plastic scintillation particles to low-energy radioisotopes. **C. Bond**, M. Han, C. Janczak, C.A. Aspinwall

Bioinorganic Chemistry and Chemical Biology

3. Activation of the C(sp³)–NH₂ bond of primary alkylamines by a high-valent Co^{III,IV}₂(μ-O)₂ diamond core complex. Y. Li, **S. Handunneththige**, M. Talipov, D. Wang
4. Pro-oxidant strategies in disulfide-masked iron prochelators. **J. Fussell**, E. Tomat
5. Heteroleptic dipyrindione complexes: Introduction of bridging ligands. **L. North**, C. Curtis, E. Tomat
6. Synthesis and characterization of gold nanoparticles prepared with novel thioether-functionalized ionic liquids. **E. Kulesus**, J.A. Games, H.R. Leloup, M. Watzky, H. Zhao

7. High pH activated chemical probes for the exploration of the mosquito larvae midgut proteome. **H.A. Sofka**, G.J. Davis, J.C. Jewett
8. Coordination chemistry of dipyrindione ligands: Intramolecular hydrogen bonding and ligand-centered radical stabilization. **C. Curtis**, A.V. Astashkin, E. Tomat
9. Investigation of pheophorbide-based sensors for photoacoustic imaging of biological iron. **T.E. Smith**, A. Ghavam, Z. Xu, E. Tomat
10. Introduction of a pyridine donor in linear oligopyrrolic ligands: Effects on coordination chemistry and redox properties. **I. Habensus**, E. Tomat
11. Solution characterization of V(V) citrate complexes. **K. Kostenkova**, K. Briseno, D. Huang, D.C. Crans
12. Novel insulin-enhancing oxidovanadium(IV) complex with S₂O₂ donor ligand: Synthesis, characterization, and *in vivo* evaluation of antidiabetic and hypolipidemic properties. L.M. de Lima, **K. Kostenkova**, **D.C. Crans**, W.E. Silva, M.F. Belian, E.C. Lira
13. Synthesis and structural study of thiosemicarbazones and its bismuth complexes. **M. Beltran**, R. Sugich Miranda, E.F. Velazquez Contreras, J.F. Vázquez Armenta

Computation Chemistry: In silico in the Copper State

14. Exploring the effect of omecamtiv mecarbil on the recovery stroke of human cardiac beta myosin, using metadynamics. **A. Chakraborti**, J.C. Tardiff, S.D. Schwartz
15. Predicting pathogenicity of variants of unknown clinical significance in thin filament linked cardiomyopathies using molecular dynamics. **A.B. Mason**, J.C. Tardiff, S.D. Schwartz
- 16. Withdrawn**

Energy: Solar, Batteries and Beyond

17. Kinetic study and catalytic pyrolysis of D-glucose using red mud. **H. Abdellaoui**, F.A. Agblevor
18. SHINERS for probing organic semiconductor degradation. **K. Schneider**, J.E. Pemberton
19. Preserving water delivery infrastructure: Corrosion of water delivery pipes. **A. Ibarra Nieblas**, D. Gervasio, D. Quintanar, R. Arnold, N. McEvoy, A. Valerio, Y. Segura Ramírez
20. Novel infrared spectroelectrochemical cell for solid-state organic semiconductor degradation. L. Ostopowicz, **S.M. Tyler**, J.E. Pemberton
21. Degradation of PTB7 by light and potential. **T.J. BLACKBURN**, S.M. Tyler, J.E. Pemberton

Peptides

22. Antibiotic alternative: Silver nanoclusters conjugated to virus-like particles. **M. Dennis**, N. Lee
23. Peptide based probes for studying the protease Ste24, a key enzyme involved in human disease. **T.K. Bader**, M.D. Distefano, C.C. Germain, C. Hrycyna
24. Influence of proline on the structure, morphology and activity of the antimicrobial peptide comprising a repeating (RW)_n unit (n=6). **B.M. Almarwani**, A. Sunda-Meya, N. Phambu
25. The dissociation pathway of the p300 Taz2-p53 TAD2 complex. **T. Li**, S. Motta, A.E. Overstreet, S. Song, A. Pandini, Y. He

Physical Chemistry

26. Electrochemical and anion binding properties of redox-tagged, hydrogen bonding-based anion receptors. **J. Unzaga**, A. Nathani, N. Bhattacharjee, Y. Yi, A.H. Flood, T. Ito

Polymers and Materials

27. Improving the interface of polysiloxane and boron nitride in nanocomposites. **J.J. Cash**, J. Estevez, G. Hefley, L. Zissos

28. **Withdrawn**

29. Fourier transform infrared and Raman spectroscopy of furfuryl alcohol based thermosets and amorphous carbon. **L. Arciniaga**, K. Frederick, B.G. Potter, D.A. Loy

30. **Withdrawn**

31. Photochromic polymers with bipyridine building blocks. **C. Filbin**, Y. Yang

32. Natural deep eutectic solvents and their incorporation into polymer electrolytes. **S. Ketcham**, C.C. Browder

33. Mechanochemistry of group 4 elements-based MOFs. **F.L. Salvador**, V. Miller, K. Shimada, W. Gao

34. **Withdrawn**

35. Enzyme-responsive supramolecular hydrogels from thioglycolipids. **Y. Wang**, B.S. Deodhar, J.E. Pemberton

FRIDAY MORNING

Ventana

Polymers and Materials

Session E

Cosponsored by POLY
Y. Yang, *Presiding*

8:00 . Acid-catalysed degradation of acetal functionalized hydrogels: Influence of crosslink density on degradation kinetics. **J.R. Brown**, E. Wilts, G. Spiering, R.B. Moore, T.E. Long

8:25 . Layered supramolecular hydrogels from thioglycosides. **Y. Wang**, L.L. Kegel, D.S. Knoff, B.S. Deodhar, M. Kim, J.E. Pemberton

8:45 . Experimental design for liquid chromatography tandem quadrupole time of flight mass spectrometry analysis of a nitroplastizer degradation profile. **C.H. Wong**, A.S. Edgar, D. Yang

9:05 . Influence of photoactive polyimide precursors on the aging performance of 3D printed objects. **J. Vandenbrande**, C.B. Arrington, C. Williams, T.E. Long

9:25 . 3D Printing polyisoprene latexes with vat photopolymerization: Comparison of natural cis-polyisoprene to synthetic polyisoprene. **J. Wen**, K.D. Feller, P. Scott, R. Bean, V. Meenakshisundaram, C. Williams, T.E. Long

Polymers and Materials

Session F

Cosponsored by POLY
Y. Yang, *Organizer, Presiding*

10:15 . Energy sensitivity and electronic features of long-range disordered nanomaterials networks. **S. Tang**

10:40 . Tunable nanostructures from thermal treatments of metal organic framework thin films on Si and SiO₂. **H.C. Anderson**, M. Rawlins, K.J. Stowers

11:00 . Polymer coated magnetic nanoparticles: New materials for ultra-high Verdet constant magneto-optics. **K. Carothers**, N. Lyons, N. Pavlopoulos, K. Kang, T. Kochenderfer, A. Phan, L. Holmen, S. Jenkins, I. Shim, R. Norwood, J. Pyun

11:20 . Stability of single-walled carbon nanotubes toward covalent bonding between the zigzag edges. **P.S. Senanayake**, S. Smirnov, M. Talipov

Copper

Organic Chemistry

Session C

8:15 Introductory Remarks.

8:20 . Decarboxylative allylic alkylation of phthalides: New stabilized benzylic nucleophiles for sp^3 - sp^3 couplings. **R. Navarro**

8:55 . Electrocatalytic cleavage of C–C bonds by redox-tunable Mn(N-heterocyclic carbene)-oxo complexes. **P.H. Pham**

9:20 . Synthesis of rhamnolipids and their sugar analogues from sustainable sources by chemical and chemoenzymatic pathways. **A.S. Compton**, T.W. Roberts, B.S. Deodhar, J.E. Pemberton

Canyon A

Black Chemists towards a Brighter Future

Session A

With support from NOBCCChE
I. R. Speight, *Presiding*

8:00 Introductory Remarks.

8:05 . Understanding electrostatic effects at transition metal complexes for controlling reactivity. **N.G. Leonard**, J.Y. Yang

8:25 . Preventing adverse pregnancy outcomes with human milk. **S.D. Townsend**

8:45 . Applying quantitative proteomics to understand the impact of high-fat diet and dietary sugar intake on hepatic energy homeostasis. **C.D. King**, S. Shah, S. Park, R. Helsley, C. Kahn, S. Softic, B. Schilling

9:05 . Multiscale benchmarking of the molecular electrocatalyst Co-DIM for nitrate reduction and ammonia recovery from wastewaters. M. Liu, D. Miller, S.T. Oyakhire, J. Guo, **W.A. Tarpeh**

9:25 . Enzyme assisted peptide self-assemblies trigger cell adhesion in high density gels. **B. Loftin**, M. Criado-Gonzalez, E. Harth, L. Jierry, P. Schaaf

9:45 Intermission.

10:15 . Developing a method to temporally resolve protein-protein interactions. **M.T. Wright**, L. Plate

10:35 . Synthesis, characterization, and performance of coated copper nanoparticles in high humidity and H₂S environments. **H.O. Lee**, A. Vallejos, M.A. Ringgold, C. Davis-Wheeler, L.J. Treadwell

10:55 . KAt is out of the flask: An improved synthesis of a tert-butyl allyl ligand and its metal complexes. **I.R. Speight**, H.P. DeGroot, T.P. Hanusa

11:15 . Synthesis of aqueous copolymer brushes: A potential tool for accelerating protein structure determination using cryoEM. **K. Estes**, S. Hyun, D.H. Thompson

Canyon B

Energy: Solar, Batteries and Beyond

Session A

8:00 . Hyperbranched polymer hosts for ion-conductive solid state electrolytes. **C.C. Browder**

8:25 . Symmetric organic redox flow battery model based on a helical carbenium ion electrolytes. **J. Moutet**, D.D. Mills, T.L. Gianetti

8:50 . ~~Mapping energy level alignment at the electrolyte/semiconductor interface: Ionic liquids on printable semiconductors.~~ **L. Du Hill**, M. De Keersmaecker, J. Hill, A. Colbert, N.R. Armstrong, E.L. Ratcliff

9:15 . Development of UHV controlled dosing chamber with potential control for study of organic semiconductor degradation. **T.J. BLACKBURN**, P.A. Lee, J.M. Klaus, J.E. Pemberton

9:40 Coffee Break.

10:15 . Photodegradation of a model oligomer of the donor-acceptor polymer F8BT. **S.M. Tyler**, J.E. Pemberton

10:40 . Degradation of organic photovoltaic materials: A multi-modal approach. **M.A. Anderson**, B.W. Larson, E.L. Ratcliff

11:05 . Non-peripherally octathiolate substituted phthalocyanines: Synthesis and applications in solar cells. **T. El Assaad**, D.V. McGrath

Canyon C

Indigenous Ways of Knowing, Indigenous Education, and Chemistry

Financially supported by SACNAS

8:00 Introductory Remarks.

8:15 . Traditional ecological knowledge policy considerations for abandoned uranium mines on Navajo nation. T. Rock, **J.C. Ingram**

8:45 . Incorporating culturally relevant materials in chemistry teaching and research. **H. Keita**

9:15 . Quantification of calcium in blue corn mush. M. Jim, D. Begay, **J.C. Ingram**

9:45 Break.

10:15 . Palauan traditional medicine, DAK, as a control for genetic/epigenetic predisposition towards lifestyle diabetes in the Palauan population. **C. Kitalong**, B. Skey, M. Faimau, V. Yano

10:45 . Vapor sorption analysis of the Mexican national dish: Oaxacan molé negro. **C. Pacheco-Borden**

11:15 . Ethical, cultural and spiritual concerns of indigenous students and professionals in STEMM. **J.C. Ingram**, A. Castagno, R. Camplain, D. Blackhorse

AZ History Museum Auditorium

Polyoxazolines

Financially supported by Polymer Chemistry Innovations

8:00 Introductory Remarks.

8:05 . Poly(2-oxazoline)s and beyond. **R. Hoogenboom**

8:45 . SER-227 – A single dose long-acting polyoxazoline (POZ) conjugate of buprenorphine for the treatment of post-operative pain and opioid use disorders. **T. Viegas**, R. Moreadith, K. Yoon, R. Weimer

9:20 . Poly(2-ethyl-2-oxazoline) stabilized hydrogen peroxide: An innovative combination in bleaching recycled paper fibers. **L.M. Stratton**

9:45 Intermission.

10:15 . Benefits of Polyoxazolines vs traditional plant derived binders in watercolor for professional artist and conservators. **U. Jackson**

10:40 . Polyoxazoline – uses in personal care formulations¹Amit Patel,*Applied science and innovation manager¹apatel@coastsouthwest.com ,CoastSouthwest Inc. **A. Patel**

11:05 . Aquazol® used in washable coatings for microelectronic applications. **A. Gray**, Q. Moultrie-Margoline, **J.C. Moore**

11:30 . Poly(2-ethyl-2-oxazoline) applications: What is this material, where can it used, and why is it good in industrial applications?. **C. Mahl**, **L.M. Stratton**

11:55 Concluding Remarks.

Pima-Madera

Posters 9:00 - 11:30

Biochemistry

36. Derivation of elastic and viscoelastic properties of lipid bilayers using molecular dynamic simulations. **J. Pallarez**

37. Utilizing NMR to analyze naphthyl-phosphate specificity in protein tyrosine phosphatases. **J.A. Pinkston**, R. Shen, C. Simons, A.C. Hengge
38. Protein engineering methods to understand kinase signaling. **B. Amofah**, A.T. Platt, I. Ghosh
39. Engineering an orthogonal protein-protein interaction to study protein function. **K. Andakudi Kesavan**, M. Bienick, I. Ghosh
40. Orthogonal domain-insertion kinase switches. **S.M. Sugerman**, M. Bienick, I. Ghosh

Chemical Education

41. Connections between intermolecular forces and biofuel purification: An example of systems thinking in chemical education. **C. Wang**
42. Surveying the landscape of LA(Learning Assistant) implementation in STEM courses at the University of Utah. **H.L. Torres**, R. Frey, J. Edwards, S. Ray
43. Analysis of task structures in undergraduate STEM laboratory documents. **A. Reid**, J. Heath, J. Velasco
44. Relationships between task structure, teacher behaviors, and student behaviors in undergraduate chemistry laboratory courses. J. Heath, A. Reid, **J. Velasco**
45. Citizen science: Water quality monitoring of Carlsbad Lake. **R.K. Hayes**, T. Hayes
46. Development of a microscale, microwave-assisted synthesis of tetraphenylporphyrins for the teaching laboratory. **M. Nitka**, M.A. Cranswick
47. Trace evidence of cosmetics. **D.J. Cowles**, **A. Arnold**, **J. Pledger**, M. Devries, R. Schmidt, T. Eaton

High School and Community College

48. Effects of extreme heat on heat related illnesses. **A. Saito**, **T. Moseley**, **A. Khan**, H. Keehu, E. Bandala

Organic Chemistry

49. Metal coordination to nitrogen-containing polyaromatic ligands: Synthesis and characterization via NMR and UV-Vis spectroscopy. **Z. Strong**, L.M. Vazquez, S.K. Hurst
50. Isomers and redox chemistry of non-innocent vanadium Schiff base catecholates. **A. Bates**
51. Plastic wastes, CO₂, and N₂ as sources of high value products. **T.H. Myren**, H. Petersen, P.H. Pham, A.M. Lilio, T. Stinson, C. Huntzinger, Z. Mast, O. Luca
52. Synthesis of functionalized ionic liquids for coal dissolution and pretreatment. **M. Franklin**, H. Zhao
53. Electrochemically activated sorbents for direct air capture of carbon dioxide. **H.A. Petersen**, A.W. Alherz, C. Musgrave, O. Luca
54. Highly efficient green method for the acylation of saccharides. **R.M. Stolley**, B. Bruggeman, C. Boxley, L. Miller
55. Synthesis of 2,2'-bipyridines by a Lewis acid induced phosphorus ligand extrusion reaction. **S.A. Markham**, B. Atwater
56. Amino acid ionic liquid polymerization agents for electrolyte polymer hosts. **Z. Bess**
57. **Withdrawn**
58. Cocrystals of quercetin with different acids and their physicochemical properties. **T. Kornilova**, P. Chavez, R. Castañeda, T. Timofeeva, E. Jucov
59. Carbon based lewis acids in frustrated lewis pair chemistry. **R. Kaur**, A.C. Shaikh, J.M. Veleta, T.L. Gianetti
60. Synthesis and characterization of [4]helicene cations for photocatalytic, optoelectronic and energy storage applications. **D. Mills**
61. *Ortho*- and *para*- substituted reactions of alcohols and ketones. **A.J. Palmer**, M.D. Mosher
62. Total organic fluorine (TOF) analysis for total PFAS mass estimate. **L.M. Abrell**, D. Barrientes, M. Amistadi, J.D. Chorover

63. HPLC analysis of potentially counterfeit amoxicillin. **H. Noel**
64. Synthesis of CF₃-containing spirocyclic indolines via a red-light-mediated trifluoromethylation/dearomatization cascade reaction. **S.M. Stull**, L. Mei, T.L. Gianetti, J. Moutet
65. **Withdrawn**
66. **Withdrawn**
67. **Withdrawn**

FRIDAY AFTERNOON

Copper

Bioinorganic Chemistry and Chemical Biology

Session A

N. Cornejo, E. Tomat, *Presiding*

1:15 Introduction.

1:20 . Development of 'copper-free click' enabled triazabutadiene for bioorthogonal applications of aryl diazonium ions in bioconjugate chemistry. **G.J. Davis**

1:40 . Glycoconjugate prochelators exploit glucose transporter 1 to target iron in cancer cells. **Y. Sung**, E. Tomat

2:00 . Essential and non-essential metal ions and application of vanadium complexes as therapeutic agents against cancer. **D.C. Crans**

2:30 . A peptide nitrile hydratase active site model system: Insight into co-type NHase active site maturation. **i.R. ogutu**, B. Bennett, R.C. Holz, A.T. Fiedler

3:00 Break.

3:30 . Re(I) tricarbonyl complexes as coordinate covalent inhibitors for the SARS-CoV-2 main cysteine protease. **J. Karges**, M. Kalaj, M. Gembicky, S. Cohen

4:00 . Construction of novel hybrid nanostructures via organometallic Au(III) reagents. **E. Doud**, J. Stauber, A.L. Rheingold, A.M. Spokoyny

4:30 . Exploring the chemical properties of new hydrophobic and stable non-innocent vanadium(V) compounds. **H. Murakami**, A. Haase, J. Koehn, A. Levina, P. Lay, D.C. Crans

Canyon A

Black Chemists towards a Brighter Future

Session B

With support from NOBCChE

H. Nelson, *Presiding*

1:15 Introductory Remarks.

1:20 . Addressing the disparity between being a non-traditional student and the guidelines imposed by contemporary research in STEM with a little bit of organic-inorganic interfaces. **L. Whittaker-Brooks**

1:40 . Strategies for exploring the role of mitochondrial dynamics during disease-state through the use of triazabutadiene chemical probes. **D. Johnson**, J.C. Jewett

2:00 . Analysis of secondary marine aerosol formation from a mixture of volatile organic compounds. **A.N. Moore**, L. Cancelada, K.A. Prather

2:20 . Interrogating the isoprenoid biosynthetic pathway through organophosphorus chemistry. **N.M. Harmon**

2:40 . Addressing the future of science: Combining electrocatalytic CO₂ capture and conversion and improving mentorship at UC Irvine. **A.C. Matus**, J.Y. Yang

3:00 Intermission.

3:30 . Towards real-time, high resolution neurochemical monitoring *in vivo*. **S.T. Mensah**, O. Lukoyanova, K. Yang, P.S. Weiss, M. Stojanović, A.M. Andrews

3:50 . Accelerating the discovery of anesthetics via automation in chemistry and biology. **J.K. Sello**

4:10 . Faculty member roles in recruiting talent and designing experiences to support student success, academically and culturally. **M.F. Page**

4:30 . Synthetic strategies towards fluorosulfurylation of organic molecules and sulfur-fluoride exchange (SuFEx). **N.D. Ball**

4:50 Concluding Remarks.

Canyon B

Energy: Solar, Batteries and Beyond

Session B

1:15 Introductory Remarks.

1:20 . Bifunctional nickel and copper electrocatalysts for CO₂ reduction and the oxygen evolution reaction. **H. Pan**, C. Barile

1:40 . New aryl bridged [2Fe-2S] cluster catalysts incorporated into a metallopolymer framework to electrocatalytically produce H₂ from water. **A.G. Coen**, M.O. Hamilton, R.S. Glass, J. Pyun, D.L. Lichtenberger

2:00 . Effect of DP on the electrocatalytic production of hydrogen in neutral water with [2Fe-2S] metallopolymer electrocatalysts. **A. Gibson**, K. Clary, J. Pyun, R.S. Glass, D.L. Lichtenberger

2:20 . Photoredox properties of carbocation-based ligands. **J.M. Veleta**, L. Mei, T.L. Gianetti

2:40 . Alternate energy sources: What comes after fossil fuels?. **J. Gerlach**

Bioanalytical Chemistry

3:30 Introductory Remarks.

3:35 . Characterizing xenobiotic hemp metabolites in the raw honey of Western honey bees (*Apis mellifera*) by HPLC-MS/MS. **E. Palumbo**, A. McCorkle

3:55 . Counterflow isotachopheresis-capillary zone electrophoresis with laser induced fluorescence (CFITP-CZELIF) to analyze trace compounds in complex matrices. **A.N. Amarakoon**, B. Liu, C.A. Aspinwall

4:15 . Development of ion channel probe-scanning ion conductance microscopy for simultaneous chemical and topographical imaging. **C. Hsieh**, B. Zacher, C.A. Aspinwall

4:35 . Solid-state NMR spectroscopy and molecular simulations reveal antimicrobial peptide biomembrane interactions. **F.T. Doole**, C.K. Chan, E. Streitwieser, D. Sarkar, M. Kim, A.V. Struts, A. Singharoy, M.F. Brown

Canyon C

Physical Chemistry

Topics in Physical Chemistry I

V. Huxter, *Presiding*

1:15 Introductory Remarks.

1:20 . Watching charges move at the organic semiconductor/electrolyte interface. **E.L. Ratcliff**

2:00 . Plasmonic chiroptical enhancement of molecular vibrational circular dichroism. **A.C. Morren**, A. Nguyen, A. Ballance, J.S. Shumaker-Parry

2:20 . Ultrafast dynamics of a reversible antiferromagnetically coupled dimer. **A. Kumar**, A. Swain, B.J. Thompson, V. Huxter

2:40 Concluding Remarks.

Physical Chemistry

Topics in Physical Chemistry II

V. Huxter, *Presiding*

3:30 Introductory Remarks.

3:35 . Controlling charge, spin and light in lead-halide inspired hybrid semiconductors. **M.C. Beard**

4:15 . Mechanistic insights about electrochemical proton-coupled electron transfer derived from a vibrational probe. **S. Sarkar**, A. Maitra, W.R. Lake, R.J. Warburton, S. Hammes-Schiffer, J. Dawlaty

4:35 . Quadruple hydrogen bond-containing A-AB-A triblock copolymers: Probing the Influence of hydrogen bonding in the central block. **B. Liu**, X. Chen, G. Spiering, R.B. Moore, T.E. Long

4:55 Concluding Remarks.

AZ History Museum Auditorium

Inorganic Chemistry Research and Teaching: A Symposium in honor of Dennis L. Lichtenberger

Financially supported by Anonymous

J. H. Enemark, *Presiding*

1:15 . Bent and linear nitric oxide ligands in an asymmetric butterfly, CoMoCo': Its characterization and how/why it forms. **M.Y. Darensbourg**, M. Quiroz, P. Guerrero, J. Reibenspies

1:50 . Electrocatalysts for H₂ generation from neutral water. **R.S. Glass**, J. Pyun, D.L. Lichtenberger, D.H. Evans, K. Matyjaszewski, K. Clary, M. Karayilan, M. Hamilton, W. Brezinski, S. Li, L. Fu

2:25 . Transforming theory into experimentally testable models: How a card-carrying inorganic chemist discovers drugs and predicts protein structures by writing code. **G.E. Kellogg**

3:00 Intermission.

3:30 . Controlling light with polymers: Next generation plastics optics for infrared imaging and photonics. **J. Pyun**

4:05 . Fundamental spectroscopic and theoretical studies of organometallic dithiolene compounds provide insight about catalysis by molybdenum enzymes. **J.H. Enemark**

4:40 Concluding Remarks.

SATURDAY MORNING

Copper

Bioinorganic Chemistry and Chemical Biology

Session B

J. C. Jewett, Y. Sung, *Presiding*

8:30 Introduction.

8:35 . Non-innocent vanadium imidazole-based Schiff base complexes with anti-cancer properties: Synthesis and characterization. **K. Kostenkova**, J.T. Koehn, H. Murakami, C. Uslan Yigit, S.A. Markham, A. Levina, P. Lay, D.C. Crans

8:55 . Functionalized triazabutadienes for the intracellular delivery of benzene diazonium ions. **N. Cornejo**, B. Amofah, I. Ghosh, J.C. Jewett

9:15 . The wonderful world of copper ionophores as antimicrobials (and other copper tales). **M. Johnson**

9:45 Break.

10:15 . Understanding the conformational component of NOS mechanism. **A.V. Astachkine (Astashkin)**, C. Feng

10:45 . Engineering of monosized lipid-coated mesoporous silica nanoparticles for CRISPR delivery. **A. Nouredine**, A. Maestas-Olguin, E. Saada, A. LaBauve, J. Agola, K. Baty, T. Howard, J. Sabo, C. Sandoval Espinoza, J. Doudna, J. Schoeniger, K. Butler, O. Negrete, C. Brinker, R. Serda

11:15 . Antiproliferative iron prochelators: 5-halogeno-salicylaldehyde-derived thiosemicarbazones with thiol-reactive sulfonate ester masks. **W. Wu**, E. Tomat

Canyon A

Chemical Business: Resources and Best Practices

Cosponsored by SCHB
J. E. Sabol, *Presiding*

8:00 Introductory Remarks.

8:05 . ACS Division of Small Chemical Businesses (SCHB) opportunities and member benefits. **J.E. Sabol**

8:30 . Startup company playing with 800-pound gorillas. **B. Gordon**

8:55 . Chemistry research in academic/industrial partnerships in the brewing industry. J. Farmer, A.T. Koppisch, C.h. Morrissey, C. Patcher, C. Selna, **J.C. Ingram**

9:20 . Best practices for the solo practitioner. **J.E. Sabol**

9:45 Intermission.

10:15 . Breaking the concrete wall: Commercializing new green construction materials. **D.A. Stone**

10:40 . Statistics for chemistry! Animals, the Great War, and anecdotes. **D. Barron**

11:05 . Discussion.

Canyon B

Bioanalytical Chemistry

K. Saunders, *Presiding*

8:00 Introductory Remarks.

8:05 . Investigation of deuterated cryoprotectants within living rice cells by coherent Raman scattering microscopy. **F.M. Samuels**, D.G. Stich, R. Bonnart, G.M. Volk, N.E. Levinger

8:30 . DNA based electrochemical sensor for determination of topotecan hydrochloride as an anticancer drug with MAPbI₃/MWCNTs nanocomposite modified on the glassy carbon electrode. **O. NODRAT**, M. Mehmandoust, N. Erk

8:55 . Guanine and adenine based DNA biosensor modified with Fe₃O₄/PANI nanocomposite as analytical tool for determination of epirubicin. **M. Mehmandust**, N. Erk

9:20 . Electrophysiological sensor prepared from polymer scaffold stabilized black lipid membranes with reconstituted nicotinic acetylcholine receptor. **Z. Wang**, X. Wang, B. Zacher, C.A. Aspinwall

9:45 Intermission.

10:15 . Characterizing monoamine neuroadaptation in the hub of the central auditory system as a major dysfunction underlining noise-induced hearing loss. P. Wilson, B. Doe, **A. Apawu**

10:40 . Understanding hormone secretion from pancreatic islet cells via amperometric detection of exocytotic events. **H.B. Schmidt**, B. Zacher, C.A. Aspinwall

11:05 . Luminescent zirconium metal-organic frameworks as enhanced nano-scintillators for sensing low energy β emitters. **C. Ke**, M. Han, B. Zacher, C.A. Aspinwall

Canyon C

Physical Chemistry

Topics in Physical Chemistry III

V. Huxter, *Presiding*

8:15 Introductory Remarks.

8:20 . Pulling protons with light: Excited state basicity, principles and applications. J.R. Hunt, M.J. Voegtle, **J. Dawlaty**

9:00 . Tunable excited state dynamics of Zn(II) tripyrrindione. **A. Swain**, V. Huxter

9:20 . Unusual mechanism of hydrogen atom transfer from methoxy radical to nitric oxide via aromatic transition state. **M. Talipov**, P.S. Senanayake

9:40 Concluding Remarks.

9:45 Intermission

10:15 Introductory Remarks.

10:20 . Local binding environment: A substrate's view of protein-RNA molecular recognition. M. Jonely, R.K. Singh, B.L. Bass, **R. Noriega**

11:00 . Time-resolved X-ray scattering reveals rhodopsin functional volumetric expansion. **C. Menon**, K. Karpos, T. Grant, A.V. Struts, S. Fried, M.C. PERERA, I. Kosheleva, L. Salas-Estrada, A. Grossfield, P. Fromme, R. Kirian, M.F. Brown

11:20 . **Possibly Withdrawn** Microalgae harvesting boat using plate and frame filter presses with cellulose addition to mitigate harmful algae blooms. **J.K. Shurtleff**, H. Jones

11:40 Concluding Remarks.