MoTEC 2025

July 20-25, The Queen Mary Hotel, Long Beach, CA

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Russ Hille, Department of Biochemistry, University of California, Riverside (Chair)

Kylie Allen, Department of Biochemistry, Virginia Tech University

Eunsuk Kim, Department of Chemistry, Brown University

Cedric Owens, Schmid College of Science and Technology, Chapman University

Chad Saltikov, Dept Microbiology and Environmental Toxicology, University of California, Santa Cruz

Jarett Wilcoxen, Department of Chemistry and Biochemistry, University of Wisconsin-Milwaukee

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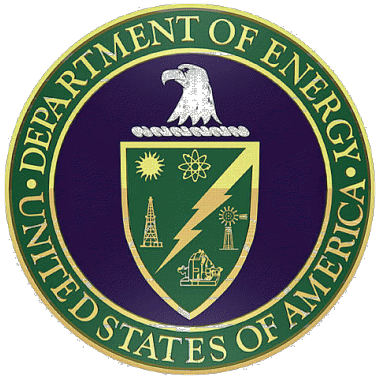

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The MoTEC 2025 meeting falls under the aegis of the University of California system generally and its Riverside campus specifically.

The University of California, Riverside's (UCR) Standards of Conduct govern the behavior of all students, faculty, and staff at the university:

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- **Professionalism**: Behave in a professional manner
- **Safety**: Be mindful of your surroundings and the safety of others
- **Reporting**: Report any dangerous situations or people in distress to UCR staff

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- Compromises university neighbor relations

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Program Sunday July 20, 2025

12:00-18:00 Check-in and Registration *Hotel Lobby, A Deck (Level 3)*

18:00-20:00 Dinner *Royal Salon, Promenade Deck (aft)*

Note: All scientific and poster sessions will be in the Queen's Salon, Promenade Deck (amidship)

20:00-21:00 Session I Russ Hille, Chair

20:00-20:15 Introductory Remarks – Russ Hille

20:15-21:00 Anne-Kathrin Duhme-Klair, University of York, UK
Bioinspired oxygen atom transfer: light-induced activation of molybdoenzyme mimics

21:00-23:00 Opening Reception *Verandah Room and Deck, Promenade Deck (stern)*

Program Monday, July 21, 2025

7:00-8:30	Breakfast
8:30-10:30	Session II (Sharon Burgmayer, Chair)
8:30-8:55	Bernd Clement, University of Kiel *mARC as basis for the clinical candidate N-succinyloxydabigatran*
8:55-9:00	Q&A
9:00-9:25	Barbara Schoepp-Cothenet, CNRS Marseilles *Enzymatic, spectroscopic & structural investigations of the respiratory arsenate reductase Arr and the arsenite oxidase Aio …*
9:25-9:30	Q&A
9:30-10:30	Three flash talks from posters (15 min + 5 min discussion each)
	Deborah Boes, Delft University of Technology (Poster 1) *Recombinant expression of W-containing aldehyde:ferredoxin oxidoreductase (AOR) in Escherichia coli*
	Ananthu Vasudev Modappilappally, University of Illinois Chicago (Poster 6) *Modeling xanthine oxidase family, structurally and functionally*
	Elena Rossini, Technical University of Berlin (Poster 11) *An engineered soluble periplasmic formate dehydrogenase from Cupriavidus necator*
10:30-11:00	Coffee Break
11:00-12:30	Session III (Jarett Wilcoxen, Chair)
11:00-11:25	Katrin Fischer-Schrader, University of Cologne *From mystery to mechanism: amidoxime reducing components as players in plant nitric oxide synthesis?*
11:25-11:30	Q&A
11:30-11:55	Ralf Mendel, Technical University of Braunschweig *Molybdate high affinity transporters in plants and fungi*
11:55-12:00	Q&A
12:00-12:25	Ulrike Kappler, University of Queensland (*via videoconference*) *Where metabolism and virulence meet – sulfoxide reductases as determinants of bacterial survival in H. influenzae, E. coli and beyond*
12:25-12:30	Q&A
12:30-14:00	Lunch
14:00-15:00	Session IV (Ralf Mendel, Chair)
14:00-14:25	Graham George, University of Saskatchewan *The active site of Cupriavidus necator formate dehydrogenase from X-ray absorption spectroscopy and density ffunctional theory calculations.*
14:25-14:30	Q&A
14:30-14:55	Marty Kirk, University of New Mexico *Advancing our understanding of mARC and type I DMSO reductase catalysis*
14:55-15:00	Q&A
15:00-18:30	Free Time
18:30-20:00	Dinner
20:00-21:30	Session V (Cedric Owens, Chair)
20:00-20:25	Johannes Rebelein, MPI, Marburg *EMBO Young Investigator Lecture* *Decoding and Taming Microbial Nitrogenases for CO_2 Conversion*
20:25-20:30	Q&A
20:30-20:55	Yilin Hu, University of California, Irvine *Heterologous synthesis of a simplified nitrogenase analog in E. coli*
20:55-21:00	Q&A
21:00-21:25	Markus Ribbe, University of California, Irvine *Modular synthesis of nitrogenase in E. coli via a bioinorganic-synthetic biology approach*
21:25-21:30	Q&A
21:30-23:00	Poster Session (odd numbered posters presenting)

Program Tuesday, July 22, 2025

7:00-8:30	Breakfast
8:30-10:30	Session VI (Eunsuk Kim, Chair)
8:30-8:55	Maria João Romão, New University of Lisbon *Insights into the catalytic mechanism of arsenite oxidase from crystallographic data on substrate-bound complexes, complemented by photo-reduction studies*
8:55-9:00	Q&A
9:00-9:25	Jarett Wilcoxen, University of Wisconsin, Milwaukee *Tuning catalysis in molybdopterin enzymes*
9:25-9:30	Q&A
9:30-9:55	Paul Bernhardt, University of Queensland *Mo-catalysed nitrite reduction? - an electrochemical perspective*
9:55-10:00	Q&A
10:00-10:25	Stéphane Grimaldi, University of Aix-Marseilles *Structural and EPR spectroscopic investigations of pH-dependent Mo(V) species in Thermus thermophilus sulfite dehydrogenase*
10:25-10:30	Q&A
10:30-11:00	Coffee Break
11:00-12:30	Session VII (Marty Kirk, Chair)
11:00-11:25	Jenny Yang, University of California, Irvine *Electrocatalytic generation of transition metal hydrides for CO_2 reduction to formate*
11:25-11:30	Q&A
11:30-11:55	Stanislav Groysman, Wayne State University *Synthesis and reactions of Mo(VI)-Cu(I) complexes supported by heterodinucleating ligands as models of Mo-Cu CODH*
11:55-12:00	Q&A
12:00-12:25	Yasuhiro Ohki, Kyoto University *Bioinspired Mo-containing metal-sulfur clusters for small molecule activation*
12:25-12:30	Q&A
12:30-14:00	Lunch
14:00-15:30	Session VIII (Kylie Allen Chair)
14:00-14:25	Trevor Rapson, CSIRO *Probing oxygen sensitivity of nitrogenase to assist engineering of nitrogen-fixing crops*
14:25-14:30	Q&A
14:30-15:30	Three flash talks from posters (15 min + 5 min discussion each) Michel Struwe, University of Kiel, Germany (Poster 14) *Integrative Structural Modeling of the YcbX-CysJ-CysI Complex* Ralf Weßbecher, University of Freiburg (Poster 17) *Structure and mechanism of 1-testosterone dehydrogenase, a novel member of the xanthine oxidase family* Jing Yang, University of New Mexico (Poster 19) *Active site structure and mechanism of a molybdenum catechol dehydroxylase*
15:00-18:30	Free Time
18:30-20:00	Dinner
20:00-21:30	Session IX (Partha Basu, Chair)
20:00-20:25	Eunsuk Kim, Brown University *Bioinspired molybdenum complexes for sulfur atom transfer catalysis*
20:25-20:30	Q&A
20:30-20:55	Neal Mankad, University of Illinois, Chicago *Oxygen atom transfer reactions of bio-inspired molybdenum compounds: C-H hydroxylation, sulfide oxidation, and more*
20:55-21:00	Q&A
21:00-21:25	Nadia Mösch-Zanetti, University of Graz *Tungsten complexes as mimics for acetylene hydratase*
21:25-21:30	Q&A
21:30-23:00	Poster Session (even numbered posters presenting)

Program Wednesday, July 23, 2025

7:00-8:30	Breakfast
8:30-10:30	Session X (Maria João Romão, Chair)
8:30-8:55	Peter Hagedoorn, Delft University of Technology *W-BioCat – heavy metal enzymes for sustainable industrial biocatalysis*
8:55-9:00	Q&A
9:00-9:25	Maciej Szaleniec, Polish Academy of Sciences *Exploring the mechanistic pathways of tungsten and molybdenum enzymes by means of chemical imagination and multiscale modelling*
9:25-9:30	Q&A
9:30-9:55	Matthias Boll, University of Freiburg *Enzymatic conversion of alkanes to chiral alcohols at MoCo: structure, function and chaperon-dependent MoCo insertion of alkane hydroxylase*
9:55-10:00	Q&A
10:00-10:25	Bruno Guigliarelli, CNRS Marseilles *Wolfram jaws – The best way to crunch CO_2?*
10:25-10:30	Q&A
10:30-11:00	Coffee Break
11:00-12:30	Session XI (José Moura, Chair)
11:00-11:25	Doug Rees, California Institute of Technology *Nitrogenase: Inside the Black Box*
11:25-11:30	Q&A
11:30-11:55	Oliver Einsle, University of Freiburg *Handle with Care: Trafficking and Maturation of the Nitrogenase FeMo Cofactor*
11:55-12:00	Q&A
12:00-12:25	Partha Basu, Indiana University, Indianapolis *Structure and mechanism of nitrate reduction in NapA: Evidence of oxygen atom transfer and reversibility.*
12:25-12:30	Q&A
12:30-14:00	Lunch *outside on the Capstan Deck*
14:00-19:30	Free Time (whale-watching excursion 15:00-17:30, dinner on one's own)
20:00-21:30	Session XII (Axel Magalon, Chair)
20:00-20:25	Silke Leimkühler, University of Potsdam *Role, insertion and protection of the sulfido ligand in molybdoenzymes from the DMSO reductase family*
20:25-20:30	Q&A
20:30-20:55	Kenichi Yokoyama, Duke University *Cryptic covalent carbon carrying mechanism of pterin formation in molybdenum cofactor biosynthesis*
20:55-21:00	Q&A
21:00-21:25	Mai Sekine, University of Tokyo *(via videoconference)* *Neuroprotective Potential of Xanthine Oxidoreductase Inhibitors*
21:25-21:30	Q&A
21:30-23:00	Poster Session

Program Thursday, July 24, 2025

7:00-8:30	Breakfast
8:30-10:30	Session XIII (Silke Leimkühler, Chair)
8:30-8:55	José Moura, New University of Lisbon *Reversible CO_2 reduction by formate dehydrogenase. Direct and mediated electrochemical catalysis*
8:55-9:00	Q&A
9:00-9:25	Dimitri Niks, University of California, Riverside *On the mechanism of action of formate dehydrogenases*
9:25-9:30	Q&A
9:30-9:55	Frank Sargent, Newcastle University *Bacterial formate hydrogenlyase enzymes*
9:55-10:00	Q&A
10:00-10:25	Inês Pereira, New University of Lisbon *Catalytic mechanism and oxygen tolerance in a W/Sec-dependent formate dehydrogenase from Nitratidesulfovibrio vulgaris Hildenborough*
10:25-10:30	Q&A
10:30-11:00	Coffee Break
11:00-12:30	Session XIV (Frank Sargent, Chair)
11:00-11:25	Axel Magalon, CNRS Marseilles *Expanding the landscape of formate dehydrogenases*
11:25-11:30	Q&A
11:30-11:55	John Stolz, Duquesne University *The Role of selenocysteine in the MopB family*
11:55-12:00	Q&A
12:00-12:25	Daan Speth, University of Vienna *Tree of life scale protein analyses: using omics tools to prioritize targets for wet lab experiments*
12:25-12:30	Q&A
12:30-14:00	Lunch
14:00-15:30	Session XV (Chad Saltikov, Chair)
14:00-14:25	Tristan Wagner, Max Planck Institute, Bremen *Biological N_2-fixation at 92 °C: unveiling the molecular secrets of an archaeal hyperthermostable nitrogenase*
14:25-14:30	Q&A
14:30-14:55	Kylie Allen, Virginia Tech University *Life outside of enzymes: Understanding the roles of pterins as signaling molecules in bacteria*
14:55-15:00	Q&A
15:30-19:00	Free Time
19:00-22:00	Banquet

Program Friday, July 25, 2025

7:00-9:00	Breakfast
11:00	*Checkout*