CALIFORNIA ENERGY RESEARCH CENTER
CSU BAKERSFIELD™

CARBON MANAGEMENT AND ENERGY INNOVATION SYMPOSIUM

THE FUTURE OF ENERGY IN CALIFORNIA: KEY MILESTONES AND CHALLENGES

Location: CSU Bakersfield Student Recreation Center
CSU Bakersfield Campus, 9001 Stockdale Hwy., Bakersfield, California

Hosted by: California Energy Research Center, CSUB
In partnership with the Lawrence Livermore National Laboratory
and the Livermore Lab Foundation

Carbon Management and Energy Innovation Technical Symposium

HOSTED BY THE

CALIFORNIA ENERGY RESEARCH CENTER
CSU BAKERSFIELD™

MIXER AND WELCOME
April 24, 2025, 5:00 – 6:30 pm

MAIN EVENT
April 25, 2025, 8:00 am – 3:15 pm

For more information contact Tony Rathburn at arathburn@csub.edu

IN PARTNERSHIP WITH:

Lawrence Livermore National Laboratory

Livermore Lab FOUNDATION

photo by Brian Pitts

The California Energy Research Center (CERC) at California State University, Bakersfield, in partnership with the Livermore Lab Foundation, is proud to host the 2025 CERC Carbon Management and Energy Innovation Symposium. A wide range of sponsors are helping to make this annual event possible, including gold sponsors Chevron and California Resources Corporation and silver sponsors The American Association of Petroleum Geologists (Pacific Section), Claire Technologies, Cornerstone Engineers, MTR Industrial Separations and National Cement.

Once again, this year, we have organized an exciting and diverse array of speakers and panelists to address carbon management issues and energy innovations of regional and national importance.

The CERC Carbon Management and Energy Innovation Symposium will feature panels of experts that will discuss topics associated with California's Direct Air Capture (DAC) Hubs, the challenges of regional subsurface storage and company strategies to decarbonize. Dynamic symposium speakers will cover issues that include hydrogen infrastructure, the economic impacts of energy transition, methods for monitoring CO2 containment and the repurposing of oil and gas infrastructures. Speakers and panelists will include experts from academia, the private sector and government.

CERC is involved in a broad spectrum of projects in the region, including those associated with microgrids, battery minerals, biofuels, community education about climate change and CO2 and hydrogen storage. At the CERC symposium, we are expanding our coverage of a diverse range of energy-related innovations, opportunities and challenges that are relevant to the Central Valley and beyond.

AGENDA Friday, April 25, 2025, CSUB Student Recreation Center

8:00 am ***Welcome and Introductions***
Dr. Matthew Herman, Emcee/Moderator, Department of Geological Sciences, CSUB
Dr. Jane Dong, Dean, College of Natural Sciences, Mathematics and Engineering, CSUB
Dr. Vernon B. Harper Jr., President, CSUB

8:20 am ***Historic Opportunities Disguised as Insurmountable Challenges: Earth Systems, Energy Innovation, and Carbon Management***
CRC Energy Transition Lecture Series Speaker: Steve Bohlen, Senior Director, Office of Government & External Affairs, Lawrence Livermore National Laboratory

9:05 am ***Building a Robust Hydrogen Ecosystem***
Panel: Kevin Woo, Principal Engineer, EN Renewables at ENTRUST;
Iryna Zenyuk, Director of the National Fuel Cell Research Center, University of California Irvine; Chris Jackson, Director, Hydrogen Generation and Fuel Cells, PHY Consulting Ltd.
Moderator: John Thompson, Manager of Science Services, California Council on Science and Technology

9:45 am ***Hydrogen Development and Infrastructure SME***
Sponsored by Cornerstone Engineering and Advisors
Speaker: Chris Jackson, Director, Hydrogen Generation and Fuel Cells, PHY Consulting Ltd.

10:25 am ***COFFEE BREAK***

10:45 am ***Repurposing Idle Wells: Challenges and Opportunities***
Panelists: Bill Bartling, Director of Regulatory Affairs, Geo2Watts;
Mike Umbro, Partner, Premier Resource Management
Moderator: Eric Dhanens, Partner/Senior Advisor, Cornerstone Engineering, Inc.

11:25 am ***California Geological Survey's Modeling and Monitoring Activities in Support of Carbon Sequestration in California***
Speaker: Jeremy Lancaster, Director and State Geologist, California Geological Survey

11:55 am ***Economic Impacts of the Energy Transition***
Panelists: Patrick Harris, Director, Corporate Development, Carbon TerraVault, California Resources Corporation; Lorelei Oviatt, Director, Kern County Planning and Natural Resources Department; Noah Deich, Senior Advisor, Carbon180
Moderator: Kate Gordon, CEO, California Forward

12:30 - 1:30 pm ***LUNCH***
Poster sessions: CSUB Student Research; Booths showcasing regional organizations and companies
Location: Solario de Fortaleza, Student Recreation Center

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AGENDA (continued)

1:30 pm ***Fireside Chat : Decoding Senate Bill 905***
Speaker: Natalie Lee, Assistant Chief of Industrial Strategies Division, California Air Resources Board
Moderator: Tony Rathburn, Interim Director of the California Energy Research Center

2:00 pm ***Evaluation and Mitigation of Induced Seismicity***
Speaker: Kayla Kroll, Research Geophysicist, Lawrence Livermore National Laboratory

A New Method for Continuous Monitoring of CO2 Containment
2:20 pm Speaker: Terence O'Sullivan, Petrophysical Consultant

Caprock Integrity and Secure Hydrogen Storage in Porous Rocks
2:40 pm Speaker: Liaosha Song, Associate Professor of Geology, Department of Geological Sciences, CSUB

FINAL REMARKS
3:00 pm Dr. James L. Rodríguez, Interim Provost, CSUB; Dr. Matthew Herman

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BILL BARTLING

Bill Bartling is Co-Founder at Geo2Watts and advisor for Lillianah Technologies. Bill is also the retired Chief Deputy for CalGEM, formerly known as DOGGR, and living in Prescott Arizona.

Prior to joining DOGGR in 2015 Bill was General Manager of Borehole Imaging for OptaSense Ltd, President and CEO of SR2020, Sr. Director of Market Strategy at Silicon Graphics Inc, CEO of SciFrame, Inc., Manager of Technical Computing at Occidental Petroleum, Sr. VP of Software Engineering at CogniSeis Development and Earth Scientist/Manager in exploration, production and research at Chevron.

Ongoing technical projects include energy transformation, carbon sequestration and management, subsurface/reservoir modeling and interpretation and medical imaging technologies.

Bill has a BA in Biology from UCSB and MS in Geology from San Diego State, is VP of SEG Pacific Section, is on the Advisory Board of the SDSU Center for Computational Sciences and is a member of SPE, AAPG and SEG.

STEVEN R. BOHLEN

Senior Director for Government and External Affairs, Lawrence Livermore National Laboratory

Steve Bohlen has served science and society as a prominent researcher, professor, senior manager in the US Federal and CA State governments, CEO of a systems engineering and naval architecture firm, and member of the Lawrence Livermore National Laboratory. Steve serves as the Senior Director for Government and External Affairs.

A graduate of the Dartmouth College, Steve earned a Ph.D. in geochemistry from The University of Michigan. Following a postdoctoral fellowship at UCLA, he became a tenured professor at Stony Brook University. From 1995 through 2000, Steve was Associate Chief Geologist for Science at the US Geological Survey. He was responsible for the scientific priorities and funding of the broad portfolio of USGS research, including the National Earthquake Hazards Reduction, Climate Change, Global Energy, and Minerals Resource programs. As President and CEO of Joint Oceanographic Institutions from 2000-2008, Steve led the global effort in scientific ocean drilling and the Integrated Ocean Drilling Program and the systems engineering and deployment of the US National Science Foundation's Ocean Observatories. In May 2014, Steve was appointed by Governor Brown to lead the CA Division of Oil, Gas and Geothermal Resources. Steve rebuilt the Division around its regulatory mission with a focus on future needs of the state. At LLNL, Steve led the Energy and Homeland Security Program, 2016-2020, which focuses on advanced energy technologies and the security of energy delivery.

With a deep understanding of how the Earth works, Steve writes and speaks about future challenges and risk assessment of energy, climate, water, and food on a small planet. His 25 years of research on the evolution and stabilization of continental crust is widely cited, and he is among a select group in ISI's Web of Science of Highly Cited Researchers in the field of Geoscience (atmosphere, ocean, and solid Earth).

NOAH DEICH

Senior Advisor at Carbon180

Noah recently served as the Deputy Assistant Secretary of Carbon Management at the US Department of Energy. Previously, he co-founded Carbon180, a non-profit focused on carbon removal, and he is currently a Stripe Climate Fellow developing an international advance market commitment for carbon removal.

KATE GORDON

Kate Gordon is the CEO of CA FWD, a statewide organization dedicated to a more sustainable, resilient, and inclusive economy across every region of the state. Gordon has spent the past two decades working at the intersection of climate change, energy policy, and equitable economic development. Most recently, she served within the Biden-Harris administration as Senior Advisor to U.S. Energy Secretary Jennifer Granholm. During her time at the Department of Energy, Gordon led a variety of locally focused initiatives to help drive a more sustainable and resilient energy transition, including creating the Community Benefits Plan framework for DOE funding under the Bipartisan Infrastructure Law and Inflation Reduction Act; driving the agency's efforts to site clean energy projects on DOE lands through the Cleanup to Clean Energy initiative; and collaborating with the White House to lead the Interagency Working Group on Coal and Power Plant Communities. Gordon served on the Secretary of Energy's Advisory Board (SEAB) through the end of the Biden-Harris administration.

Prior to her time in the Biden-Harris administration, Gordon served for several years in California state government as the Director of the Governor's Office of Planning and Research and Senior Climate Policy Advisor to Governor Gavin Newsom. In this role, Gordon launched or led several initiatives to better integrate climate and economic development strategy across the state, including the Commission on Catastrophic Wildfire Cost and Recovery, the Regions Rise Together initiative, and the Community Economic Resilience Fund (CERF), now known as California Jobs First. As founder and head of California's interagency "climate cabinet," she also led the creation of the first-ever integrated California climate budget as part of the Governor's 2020 budget proposal. Gordon's policy work in California earned her CA FWD's 2022 California Steward Leader Award.

Before entering public service, Gordon was the founding director of the Risky Business Project, co-chaired by Mike Bloomberg, Hank Paulson, and Tom Steyer and focused on quantifying and communicating the financial risks and economic impacts of climate change on key U.S. regions and sectors. Gordon has also served in senior leadership positions at several nonpartisan think tanks including the Henry M. Paulson Institute, the Center for the Next Generation, the Center for American Progress, and the Center on Global Energy Policy at Columbia University. Gordon got her start on energy and climate issues working at the national Apollo Alliance, where she ultimately served as co-Executive Director until the merger with the Blue-Green Alliance in 2011.

Gordon earned a J.D. and a Masters in City and Regional Planning from the University of California-Berkeley, and an undergraduate degree from Wesleyan University. Gordon serves on multiple boards, including for Brown Advisory and Element Resources. She teaches a regular course on "Climate: Politics, Finance, and Infrastructure" at the University of California-Berkeley and serves as a Non-resident Scholar at Carnegie California.

ERIC DHANENS

VP of Carbon and Commercial Development, Cornerstone Engineering Inc.

Formally educated in engineering and business with experience in operations and strategy, Mr. Dhanens adds an organized and well-rounded perspective to the consulting of energy and infrastructure. As the Natural Resources lead at Cornerstone, Eric performs long-term strategic plans at the intersection of economics, technology, and regulatory policy; making sense of the complex energy landscape for our clients. In addition, he develops and supports transition energy projects and technologies ranging from carbon capture and sequestration to low-carbon hydrogen production and zero-carbon steam generation.

Prior to joining Cornerstone, Eric held increasingly responsible roles in upstream oil and gas in both operations and business development. He most recently worked as Asset Manager and Business Development Lead for Grade Water & Power. Mr. Dhanens is a promising leader in California's carbon management sector as he combines advanced education with welcome practicality. He holds his chemical engineering degree from the University of Minnesota as well as a Masters in Global Energy Management from the University of Colorado.

PATRICK HARRIS

Director, Corporate Development, Carbon TerraVault

Patrick Harris is Director of Corporate Development of Carbon TerraVault (CTV), California Resources Corporation's (CRC) carbon management business focused on capture and permanent geological sequestration of third-party carbon dioxide (CO_2) emissions in California.

Mr. Harris joined CTV from Abu Dhabi National Oil Company where he focused on developing the United Arab Emirates' first carbon capture and storage platform and led several international transactions. He previously served as an Associate at Intrepid Financial Partners and Macquarie Capital in the US, and as a Drilling Engineer in his early career in Australia.

Mr. Harris holds a Master of Business Administration from China Europe International Business School, a Master of Science in Petroleum Engineering from the University of Stavanger, and a Bachelor of Engineering with a focus on Petroleum Engineering from the University of New South Wales.

DR. MATTHEW HERMAN

Dr. Matthew Herman is an Assistant Professor in the Department of Geological Sciences at California State University, Bakersfield (CSUB). He received his Ph.D. in Geosciences from The Pennsylvania State University in 2017. His research combines a wide range of geological field observations, geophysical data, and numerical models to constrain the geological processes that cause earthquakes, and in turn what they reveal about the nature of plate tectonics and other sources of deformation throughout the Earth. Dr. Herman is a leader in subduction zone earthquake science, developing and publishing cutting-edge models of earthquake cycles and plate tectonic processes in Chile, Alaska, Cascadia, New Zealand, Greece, and Japan. He has also contributed to studies of numerous earthquake sequences to understand the details of how one event can trigger subsequent earthquakes. Since moving to California, he has begun investigating the development and evolution of the San Andreas plate boundary system, and the implications for present-day geology and earthquake hazards. Most recently, opportunities to collaborate with scientists at CSUB, national laboratories, and local industry partners have led Dr. Herman to explore the geophysics, geomechanics, and potential hazards associated with underground carbon and hydrogen storage.

DR. CHRISTOPHER JACKSON

Dr. Christopher Jackson is a Chemical Engineer (PhD, BEng, MBA & Six Sigma). He is a Chartered Fellow of the Energy Institute, their H2 representative to the UK Government, chair of the H2 and Derivatives Import & Export and National Infrastructure Working Groups and vice-chair of the hydrogen steering committee. He is also an advisor on the Hydrogen Scotland's Safety Forum.

Chris has 25 years' experience as a board and M&A advisor, consultant, CTO and engineer in the hydrogen sector. His work in the Americas, Asia, and Europe spans Hydrogen Infrastructure, Electrolysers, Renewables Integration, Refuelling Systems, Energy Storage, Green Ammonia, Methanol, Fuel Cells, CHP, Reformers and CCUS.

In 2020, Chris Co-Founded NewBalance Energy providing techno-commercial diligence for investors and off-take proposals to the largest direct to export Green Hydrogen & Ammonia projects in South America and the US. In 2016, Chris co-ventured with an Oil & Gas company, developing a Hydrogen business division and has delivered 40+ Hydrogen infrastructure projects to date, UK, EU and Scandinavia.

DR. KAYLA KROLL

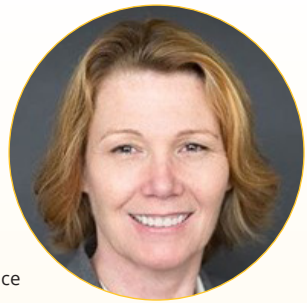
Dr. Kroll is the Associate Program Leader of the Subsurface Energy portfolio at LLNL, where she manages the portfolio of subsurface energy projects related to carbon storage, geothermal energy, and oil & gas technologies. Kayla received her Masters and PhD in Earth Science from UC Riverside, a B.S. In Geological Sciences from Cal Poly Pomona, and has been at LLNL since 2016. Dr. Kroll specializes in earthquake physics and nucleation, with an emphasis on induced seismicity. Of particular interest are the use of high-fidelity simulations to understand the impact of subsurface operations on earthquake nucleation. Kayla is the co-lead developer of the ORION tool for forecasting induced seismicity.

JEREMY LANCASTER CEG

Director and State Geologist, California Geological Survey

As the State Geologist Mr. Lancaster directs six technical programs at the California Geological Survey. These include seismic hazard assessment, seismic monitoring, geologic mapping, mineral resource mapping, and watershed focused landslide and post-fire hazard mapping programs. In preparation to meet the State's carbon management goals Mr. Lancaster organized a 3D geology team within the survey to develop capacity toward characterizing the state's geologic reservoirs and potential risks associated with the injection of carbon dioxide. With the passage of SB905 in 2022, Mr. Lancaster supported the transition of that team into a statutorily mandated geologic carbon sequestration group. Mr. Lancaster has been deeply involved in the development of this group, including the planning and execution of core mission work products.

NATALIE LEE



Natalie Lee is the Assistant Chief of the Industrial Strategies Division at the California Air Resources Board. Ms. Lee has spent over 30 years serving in California agencies, developing environmental programs and policies. Before joining the Air Resources Board, she led the Renewable Energy Division at the California Energy Commission. Ms. Lee has also worked in a variety of capacities within the California Environmental Protection Agency, launching innovative programs, leading education and marketing efforts and serving as a liaison to local governments, state and federal agencies, and the businesses community. Ms. Lee holds a Bachelor of Science in Environmental Policy from the University of California, Davis.

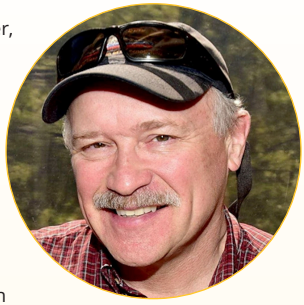
TERENCE O'SULLIVAN

Terence O'Sullivan is a Petrophysical Consultant and an accomplished petrophysicist with more than thirty years of exploration and development experience. As a Technical Consultant and lead petrophysicist for Aera Energy LLC from 1997 to 2017 his focus was on the evaluation of oil-in-place and optimization of recovery for existing and undeveloped oil fields in the San Joaquin and Santa Maria Basins, especially heavy oil reservoirs. New technologies for in situ evaluation of heavy oil viscosity by NMR, and for observation of the heavy oil recovery process, resulted in SPWLA publications and several patents. He was Technical Chair for the 2015 SPWLA annual meeting in Long Beach. Prior to Aera, he gained worldwide exploration and development experience at Ampolex (Australia), Maxus (Indonesia) and Unocal (Indonesia and Brea, CA). He has a BA in Earth and Planetary Sciences from The Johns Hopkins University, and MS in Geology from Wright State University.

LORELEI OVIATT

Lorelei Oviatt, AICP, is Director for the Kern County Planning and Natural Resources Department in California. Her years of professional planning experience in the public and private sectors focuses on project management of large scale, multiagency planning, moving extremely complex projects through the system under accelerated timeframes to streamline business permitting and support quality of life for communities. She has expedited projects permitting over 18,600 MW of renewable energy with over 5000 MWh of battery storage in operation. She leads the team for the first comprehensive Environmental Impact Report for over 2.8 million acres of oil and gas operations and developed an ordinance that provides enhanced environmental protection for communities while providing certainty for timelines for the oil industry. The first Environmental Impact Report and Conditional Use Permit for a Carbon Capture and Sequestration (CCS) project (40 million metric tons capacity) in California was approved, under her leadership in Oct 2024 along with the first final EPA Class VI injection well final permit in the US. Her work on natural resources land use for renewable energy, carbon management industries, aerospace, mining, alternative fuels and oil and gas production as well as streamlining industrial and housing projects has made Kern County a center for business development in the U.S, while ensuring environmental protections for communities and certainty for investors. She has a Bachelor of Arts degree from Baldwin Wallace University in Ohio and a Master of Public Administration from California State University – Bakersfield, where she is a Lecturer on public policy and planning topics.

ANTHONY RATHBURN



Dr. Rathburn is the Interim Director of the California Energy Research Center, Co-Director of the California Well Sample Repository, and Professor and Chair of the CSUB Dept. of Geological Sciences. He is a Research Associate Scientist at Scripps Institution of Oceanography, La Jolla, CA and Adjunct Senior Researcher at the Institute of Marine and Antarctic Studies at the University of Tasmania, Australia. Dr. Rathburn's research interests include the micropaleontology and biogeochemistry of seafloor methane seeps and oxygen-poor, organic rich marine environments. Dr. Rathburn received a BA and MS from the University of Vermont, and his Ph.D. in Geology from Duke University. He has had post-doctoral research appointments at the Australian National University and at Scripps Institution of Oceanography.

DR. LIAOSHA SONG

Dr. Liaosha Song is an Associate Professor in the Department of Geological Sciences at California State University, Bakersfield (CSUB). He received his Ph.D. in Geology from West Virginia University in 2018. His research integrates advanced imaging, geochemistry, and numerical modeling to investigate mineral assemblages, diagenesis, porosity evolution, and reactivity, as well as their effects on fluid migration in sedimentary formations. He utilizes cutting-edge techniques such as scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDS), focused ion beam (FIB) SEM, and nano-computed tomography to analyze rock microstructures. Additionally, his expertise extends to seismic and well-log interpretation.

Dr. Song has contributed to regional geological studies in the Appalachian Basin, the San Joaquin Basin of California, and the North Slope of Alaska. His current research interests include hydrogen geologic storage, CO_2 sequestration, and petrophysical properties of fine-grained sedimentary rocks.

At CSUB, Dr. Song manages the Scanning Electron Microscope Laboratory and the Computer Modeling Laboratory, providing students and researchers with state-of-the-art resources for geological investigations.

KEVIN WOO

Kevin Woo is a seasoned leader in the clean energy sector, specializing in hydrogen and hydrogen-natural gas blending. With 18 years of experience in the natural gas utility industry, he has spearheaded corporate hydrogen blending strategies and regulatory filings. Kevin has held several key industry roles, including Chair of the Center for Hydrogen Safety's hydrogen-natural gas blending working group. He successfully led the establishment of the first small-scale hydrogen blending demonstration project for the largest natural gas distribution company in the U.S. His expertise spans pipeline integrity management, air quality management, and natural gas appliance testing. Kevin holds a B.S. in Aerospace Engineering from UCLA and has contributed to numerous industry panels and conferences. Currently, he serves as Principal Engineer for EN Renewables at ENTRUST.

JOHN THOMPSON

John Thompson is Manager of Science Services, overseeing the CCST team that plans and delivers its programmatic science services including expert briefings, workshops, and other convenings. He works closely with the Director of Science Services to develop the pipeline for projects and implement strategies for engaging CCST's Partner Institutions. Previously, as Senior Science Officer for Partner Engagement, John developed close relationships with CCST's 12 academic and research Partner Institutions, connecting their collective expertise to CCST's science services and elevating their cutting edge research within the policymaking community.

Prior to working for CCST, John was a consultant with the Senate Office of Research, where he provided research support for the California State Senate on a wide variety of topics, including banking, cannabis, occupational licensing, taxation, and technology. He was previously a CCST Science and Technology Policy Fellow in the office of Assemblymember Jay Obernolte.

John received his PhD in Materials Science and Engineering from Northwestern University, modeling processes that take place during the production of high strength turbine engine blades. He earned a BA in Physics with a minor in Music from New York University.

MIKE UMBRO

Partner, Corporate Development, Premier Resource Management

In 2018, Mike started Premier Resource Management with two partners in Bakersfield, CA. PRM is developing a geothermal energy storage project on the West Side of the oil-rich San Joaquin Basin. Californians for Energy & Science is a nonprofit organization that Mike started in 2022 to study the benefits of locally produced energy. Mike holds a BA in Economics-Pepperdine University (2005), Master of Energy Business-University of Tulsa (2016), and Master of Environmental Management-Duke, Nicholas School of the Environment (2021).

PROF. IRYNA ZENYUK

Professor, Chemical and Biomolecular Engineering, University of California Irvine
Director, National Fuel Cell Research Center, University of California Irvine

Professor Zenyuk holds a B.S. (2008) in mechanical engineering from the New York University Tandon School of Engineering. She continued her studies at Carnegie Mellon University, where she earned M.S. (2011) and Ph.D. (2013) in mechanical engineering. Zenyuk did her postdoctoral fellowship at Lawrence Berkeley National Laboratory in Electrochemical Technologies Group.

She is a recipient of the NSF CAREER award (2017), Interpore society Fraunhofer Award for Young Researchers (2017), Research Corporation for Science Advancement, Scialog Fellow in Advanced Energy Storage (2017-2019), Electrochemical Society (ECS) Toyota Young Investigator Award (2018), UCI Samueli School of Engineering Early Career Faculty Excellence in Research Award (2019) and ECS Energy Technology Division Srinivasan Young Investigator Award (2021), UCI Beal Applied Innovations Early Career Innovator of the Year (2021), UCI Samueli School of Engineering Mid Career Faculty Excellence in Research Award (2022). Prof. Zenyuk published over 100 journal publications and delivered more than 100 invited presentations on topics of energy conversion and storage.

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The California Energy Research Center (CERC)
CERC expands the capabilities of CSUB faculty, research scientists, post-doctoral researchers and students to conduct research on sustainable and affordable energy production and its impacts in the region, the state of California and beyond. CERC convenes energy experts in interdisciplinary teams to conduct research relevant to carbon and hydrogen storage, water, wind, solar, petroleum and biofuel in Kern County. Additionally, CERC provides information to the community about energy and water issues in the Central Valley.

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Founded in 1952, Lawrence Livermore National Laboratory is an applied science and technology laboratory providing bold and innovative solutions to a wide variety of national security missions and the most significant challenges facing the world today. The Lab is managed by Lawrence Livermore National Security, LLC for the U.S. Department of Energy's National Nuclear Security Administration.

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