

Key CAES management positions filled

Two key CAES management positions have been filled this fall: chief operations officer (COO) and communications and partnerships lead.

Anita Gianotto came on board in early October as COO. Before taking the job, she was in the INL Energy & Environment Science & Technology (EES&T) directorate, serving as research operations manager. She has more than 25 years of experience at INL and brings a strong culture-based management style.

The new full-time COO position comes as part of the transition of CAES from shared leadership with INL EES&T to a separate directorate at INL, reporting to Lab Director Mark Peters.

Gary Gresham, who had been acting as CAES COO part time, has returned to



Anita Gianotto



Ethan Huffman

INL EES&T full time. "I have greatly valued Gary's contributions to CAES, most especially during my onboarding and transition into the director role," CAES Director Noel Bakhtian said.

In the communications and partnerships job, Ethan Huffman joined the CAES team on Oct. 30. Before coming to CAES,

Ethan had been serving as regional director for U.S. Congressman Mike Simpson's eastern Idaho office since 2012. He was INL's external affairs lead, and INL national security communications lead from 2004 to 2011.

"These were multimonth national searches, and I would be remiss in not sincerely thanking the CAES associate directors, including former associate director Tom Wood, Mike Hagood, Donna Wuthrich and INL HR, for streamlining the entire logistical process, and members of the selection committee who came from within CAES and from beyond," Bakhtian said. "These two hires serve as a critical addition to our team and will enable many of the actions and ideas that have been brought to the leadership team since I've come on board."

Bakhtian named to LINE 3.0 Commission, IGEM Council



Noël Bakhtian
Commission and
to the state's 12-member Idaho Global
Entrepreneurial Mission (IGEM) Council.

LINE 3.0 was established Sept. 25, 2017, by an executive order from Idaho Gov. C.L. "Butch" Otter. It is the third commission of its kind since 2012. Like its predecessors, LINE 1.0 and LINE 2.0, the commission's purpose is to make

Dr. Noël Bakhtian, director of the Center for Advanced Energy Studies, has been named to the state of Idaho's Leadership in Nuclear Energy (LINE) 3.0

recommendations to the governor on state policies and actions that affect the long-term viability and mission of Idaho National Laboratory and other nuclear industries in Idaho.

In addition to Bakhtian, INL Director Dr. Mark Peters and former INL Director John Grossenbacher are also serving on the 20-member LINE 3.0 Commission. The first meeting was held Oct. 4 in Twin Falls. The next is scheduled for Jan. 31 in Boise.

IGEM has a much different focus than LINE, concentrating on business and economic development through investments in technological innovation. Through the program, Idaho researchers can apply for grants to help them fund work needed to propel a product or concept toward commercialization. IGEM funding

is typically for one year, with grants ranging from \$41,000 to \$427,000. Grant applications are accepted year-round.

About CAES

The Center for Advanced Energy Studies (CAES), a consortium of Idaho National Laboratory, Boise State University, Idaho State University, University of Idaho, and University of Wyoming, is a public/private research center that provides research capabilities, energy-related educational opportunities and industry assistance to fuel economic growth.

Ross Kunz recognized as 'Distinguished Under 40' recipient



Ross Kunz

CAES researcher Ross Kunz was recognized Sept. 26 during a formal luncheon as one of the 10 Greater Idaho Falls Chamber of Commerce Distinguished Under 40 recipients for 2017.

An INL data scientist and researcher, Kunz's work involves identifying complex concepts within big data sets and condensing them into visual representations. The quality and impact of his work are leading to national and regional improvements in the field of visualization.

Kunz has developed a 3-D visualization framework that allows emergency planners to simulate responses to various safety and security scenarios. Using his framework, Kunz gathered highly technical data from an earthquake simulation and converted it. The resulting videos can be experienced by using consumer virtual reality headsets.

Kunz is also a leader in visualization of multidimensional electric vehicle charging behavior data. His visualization has been presented at the White House and is now being used by federal, state and municipal leaders to plan for expanded use of electric vehicles.

"I learned early on in my life how mathematics can be a powerful tool in creating precise, captivating visual

effects," said Kunz. "For me, everything I do throughout my research at the lab is exemplified through this philosophy."

Kunz's work extends to the community by engaging K-12 students in regional education outreach programs. Students attending these events are often experiencing for the first time how science and technology can be applied to solve real-world problems. Through these forums, Kunz has demonstrated the benefits of studying science, technology, engineering and mathematics (STEM) as building blocks to viable and exciting careers.

Synakowski is Wyoming's new CAES VPR

Edmund "Ed" Synakowski has succeeded Bill Gern as University of Wyoming's vice president for research and economic development, taking on Gern's duties on the CAES Steering Committee, which consists of four university vice presidents for research and INL's deputy director for research. CAES has four VPRs, one representing each of the collaborating universities, which also include University of Idaho, Idaho State University and Boise State University.

Synakowski came west in August from Washington, D.C., where he had been associate director of science in the Department of Energy since 2009, administering a budget of about \$400 million annually to develop nuclear fusion as an energy source. His agency supported research at more than 50 universities, eight national and two federal laboratories, and 15 industry groups.

Prior to that, he led the Fusion Energy Program at the Lawrence Livermore National Laboratory in California and held a number of roles at Princeton University's Plasma Physics Laboratory.

"I have been considering a move to a major research university for some time, and I am excited about the opportunity to be a champion for a wide range of disciplines at the University of Wyoming," Synakowski said. "There also is great potential in deepening the university's impact on the national and global stage. Partnerships with industry and other institutions, including land-grant universities, are key to leverage UW's unique strengths, and I look forward to drawing upon my experience in partnering to help the university thrive in fulfilling its mission of education, research and service."

Synakowski earned a bachelor's degree in physics at Johns Hopkins University in 1982 and a Ph.D. in physics from the University of Texas at Austin in 1988. He is the author of more than 160 peer-reviewed journal articles, primarily in the area of plasma fusion science.

He is a Fellow of the American Physical Society (APS) and a recipient of the APS Award for Excellence in Plasma Physics Research (2001) and Princeton University's Kaul Foundation Prize for Excellence in Plasma Physics Research and Technology Development (2000).



Edmund Synakowski

EPRC held in September at Deer Valley

The 7th annual Energy Policy Research Conference (EPRC) was held Sept. 7-8 at The Lodges in Deer Valley, Utah. Fifty-eight papers were presented across 17 panels about all manner of energy policy research, including coal and carbon capture and sequestration, distributed power economics, energy efficiency and valuing program, state energy policy, advanced nuclear, and stakeholder involvement and community choice.

EPRC is the annual conference of the Energy Policy Institute (EPI), the policy arm of CAES, located at Boise State University (BSU). Since 2011, the EPRC has been bringing approximately 100 researchers together from across the nation and around the globe to present energy policy research with participants and panelists from academia, think tanks

and research institutes, NGOs, national laboratories, industry, and government. EPRC has been held in a number of different venues throughout the western U.S., including Santa Fe, Denver, San Francisco, Portland, and Boise.

This year's event was chaired by CAES Director Noël Bakhtian, and the keynote speaker was Lorenzo Kristov, principal for market and infrastructure policy at the California Independent System Operator (CAISO). Kristov has led initiatives to redesign the transmission planning and new generator interconnection processes to accommodate rapid growth of renewable energy projects triggered by California's renewable portfolio standards. He has also focused on integrating distributed energy resources into markets, grid operations and planning.

He represents CAISO in national forums on electric system evolution and grid architecture, and in California proceedings related to distributed energy resources.

Selected papers from the conference have been published in *The Electricity Journal*, an Elsevier publication. The collaboration between CAES/EPI and *The Electricity Journal* dates back to 2014, when the editors selected nine papers from the conference for publication. The October 2017 issue can be found online at <http://www.sciencedirect.com/science/journal/10406190/30/8?sdcl=1>.

Stay tuned for an announcement concerning the dates and location for the 8th annual EPRC.

<http://epi.boisestate.edu/eprc/about-eprc/>

Advanced Materials Lab acquires hydraulic press

The CAES Advanced Materials Lab has acquired a hydraulic press to be used for a microstructural engineering fabrication process known as equal channel angular pressing (ECAP). ECAP is a low-cost advanced manufacturing technique that produces ultrafine or nanocrystalline grain sizes in metals and alloys through the application of severe plastic deformation to achieve exceptional grain refinement in coarse-grained metals and alloys.

The process requires a metal sample to be pushed through a channel with a bend in it. Because the required pressure to push stronger samples (e.g., steel processed at CAES) through the channel is high (100-ton range), the press has a 150-ton capability.

By establishing its low cost and advanced manufacturing techniques, the instrument will be essential to research anticipated to impact the development of nanostructured metallic fuels and cladding.

In order to be operated to higher burn-up, advanced reactors require fuels and fuel cladding with enhanced irradiation tolerance. The project involves advanced manufacturing of metallic fuels and



cladding by ECAP, followed by evaluation of the irradiation performance of the manufactured materials.

Nanostructured ceramic fuels or fuel surrogates have been fabricated and demonstrated to have enhanced irradiation tolerance, but nanostructured metallic fuels have not yet been fabricated or studied. This proposed project will be the first study of manufacturing and irradiation behavior of nanostructured metallic fuels.

Stanford to collaborate with Catalysis and Transient Kinetics Lab

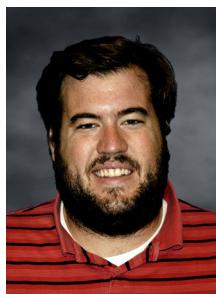
Researchers from Stanford will collaborate with CAES Catalysis and Transient Kinetics Lab.

Professor Arun Majumdar will collaborate with the team to utilize the TAP (Temporal Analysis of Products) Reactor System to study a new class of oxide materials for thermochemical water-splitting cycles. This project adds new funding to INL's Annual Operating Plan supported by Energy Efficiency and Renewable Energy's Advanced Manufacturing Office. Stanford will send two graduate students to work at CAES over the next year while they collect transient kinetic data using the TAP reactor.

INL Graduate Fellows include CAES awardees



Emma Redfoot



Stephen Hancock



Kiyo Fujimoto



Rahul Reddy Kanchala



Thomas Blackham

INL's first INL Graduate Fellows awards include five individuals from CAES universities: Emma Redfoot and Stephen Hancock (University of Idaho), Kiyo Fujimoto and Rahul Reddy Kanchala (Boise State University), and Thomas Blackham (Idaho State University).

The recipients of these competitive fellowships have their tuition and fees covered by their university during their

first years of graduate school (years 1-3), and their tuition and fees plus a \$60,000 annual salary paid by INL during the last two years of their doctoral research performed at the lab. In the first years of their doctoral program, graduate fellows spend most of their time taking classes at their university. That balance shifts in the last years of the program, when graduate fellows spend the majority of their time at INL conducting research.

"This program presents a great opportunity for everyone involved," said Kelly Beierschmitt, INL's deputy laboratory director for science and technology and CAES Steering Committee chair. "Students receive quality education and invaluable laboratory experience, and INL strengthens its partnerships with key university allies while continuing to develop the next generation of engineers, researchers, scientists and leaders."

CAES by the Numbers

(OCT. 1, 2016, TO SEPT. 30, 2017)

OUTREACH

1,119

Visitors to the Applied Visualization Lab

130

CAES Publications and Proceedings

76

Events hosted in CAES Idaho Falls facility

STUDENT IMPACT

76

Interns from CAES Partner Universities, plus:

12

Joint Appointments

11

Fellows

3

Postdoctoral Researchers

Have comments, questions or suggestions for future newsletter topics?
Contact Ethan Huffman, ethan.huffman@inl.gov, 208-526-5015.

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