

THE Core SAMPLE

Internal Newsletter of the School of Energy Resources

November | 2021

RESEARCHERS AT SER DEPLOY MICROSEISMIC SENSORS AS PART OF ONGOING BASELINE MONITORING OPERATIONS FOR THE WYOMING CARBONSAFE PROJECT

Researchers at the UW School of Energy Resources' (SER) Center for Economic Geology Research (CEGR) recently deployed a series of microseismic sensors as part of the ongoing baseline monitoring operations for the Wyoming CarbonSAFE Project.



Research scientists **Charles Nye** and **Garret Gay** traveled to Campbell County to assist the installation of 154 sensors around the project site located at Basin Electric Power Cooperative's Dry Fork Station (DFS) and surrounding areas for the purpose of collecting data and determining the normal seismic activity for the area.

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UW SER'S COLLABORATION PROPOSAL WITH BAKER HUGHES SELECTED FOR DOE FUNDING

The University of Wyoming will receive funding from the U.S. Department of Energy (DOE) as a subawardee in a collaborative grant proposal with Baker Hughes Energy Transition LLC to develop innovative solutions and uses for coal waste.

The joint proposal is among seven projects nationwide recently selected by DOE. UW will support the Baker Hughes project team in researching an economic, novel use of coal waste in additive manufacturing processes.

The project builds upon ongoing and innovative research initiated by UW's Center for Carbon Capture and Conversion (CCCC) in the School of Energy Resources (SER), which actively works to support existing markets and find novel, non-energy uses for Wyoming coal.

Patrick Johnson, a UW professor of chemical engineering, has managed several of the carbon engineering initiatives for the CCCC. Johnson and his team have been working to develop advanced materials from coal, including graphene oxide, polyurethane adhesives, coatings and foams.

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HIGHLIGHTS

Research Centers of Excellence

- The **Center for Economic Geology Research (CEGR)** has been conducting interviews to fill 2 vacant positions.
- The public comment period for the UIC permit for University of Wyoming PRB #2 in **CEGR** has closed without any comments. The CEGR team is now moving forward with field operations to drill the second well as part of the Wyoming CarbonSAFE project.
- **CEGR** representatives **Scott Quillinan**, **Kipp Coddington**, **Fred McLaughlin** and **Christine Reed** attended the Basin Electric Annual Conference in Bismarck, ND as exhibitors to share information on the Wyoming CarbonSAFE project.



Quillinan, McLaughlin and Coddington man the SER booth at the Basin Electric Annual Meeting

- The Plains CO₂ Reduction (PCOR) project, which is comprised of 13 Northwest states and four Canadian provinces to identify and address onshore regional storage and transport challenges facing the commercial deployment of CCUS in an expanded region, has received a second round of funding from the Department of Energy.

To submit news and updates
email: Christine.reed@uwyo.edu



School of
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SER EXECUTIVE DIRECTOR HOLLY KRUTKA SERVES ON XPRIZE CARBON REMOVAL JUDGING PANEL

The University of Wyoming (UW) School of Energy Resources executive director **Holly Krutka** is one of twelve judges serving on the selection panel for the XPRIZE Carbon Removal competition incentivized and funded by Elon Musk and the Musk Foundation.

The four-year, \$100 million global competition invites innovators and teams from anywhere in the world to create and demonstrate solutions that can pull carbon dioxide directly from the atmosphere or oceans, and sequester it durably and sustainably. The competition is the largest incentive prize in history.

Krutka is uniquely qualified to serve on the judging panel after a career dedicated to advancing carbon capture solutions and policy, as well as identifying novel, low-emission fossil technologies. She came to the university after serving as the Vice President for coal generation and emissions technologies at Peabody, and holds three patents focused on carbon capture.

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TWO UW TEAMS MAKE NATIONAL SEMIFINALS OF DOE GEOTHERMAL LITHIUM EXTRACTION PRIZE

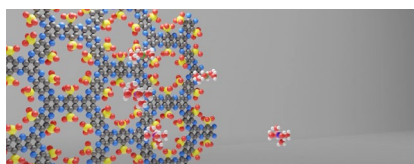
Two University of Wyoming research teams have been named Phase 1 semifinalists of the U.S. Department of Energy's (DOE) American-Made Geothermal Lithium Extraction Prize, a \$4 million competition designed to advance technologies and techniques to support direct lithium extraction from geothermal brines.

The prize is administered by the National Renewable Energy Laboratory and funded by the Geothermal Technologies Office within the Office of Energy Efficiency and Renewable Energy.

Projects led by principal investigators **Bruce Parkinson**, a professor in the UW Department of Chemistry and the School of Energy Resources (SER), and **Katie Li-Oakey**, an associate professor in the UW Department of Chemical Engineering, were two of 15 nationwide named as semifinalists. Parkinson's project is titled "A Selective Membrane for LiOH in One Step," while Li-Oakey's project is titled "Goldilocks Ligands for Direct Lithium Recovery Through Surface Engineering and Membrane Adsorption."



The competition entry for Parkinson's team was supported by the Shell 3D Visualization Center for animated graphics, while SER's **Charles Nye** is a co-PI on the team led by Li-Oakey.

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HIGHLIGHTS CONT.

Research Centers of Excellence Cont.

- **CEGR** research scientists **Garrett Gay** and **Ying Yu** will be attending the Research Experience in Carbon Sequestration (RECS) 2021 educational experience. RECS is a DOE-sponsored event focused on carbon capture, utilization and storage (CCUS) in the United States.
- **Ying Yu** is the lead author on a paper that was presented at the Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC). Organized by the Society of Petroleum Engineers, ADIPEC is the largest technical conference for oil and gas engineers worldwide. 
- **Jada Garofalo** in the **Center for Energy Regulation & Policy Analysis (CERPA)** produced two collaborative working papers that will be posted to the CERPA website in the coming days - one on the valuation of net zero scenarios for the Wyoming power system and the other, an electricity regulation primer.
- Led by **CERPA**, SER hosted a webinar presentation on Rare Earth Element and Critical Mineral development in Wyoming. The webinar had over 300 registrants, and over 170 live viewers in attendance.
- **CERPA** Senior Advisor **Kipp Coddington** presented at the 2021 Governor's Business Forum as a part of a panel discussion on Wyoming's energy economy. 
- Research led by **Dr. Patrick Johnson** in **the Center for Carbon Capture and Conversion (CCCC)** was part of a collaborative proposal with Baker Hughes that was selected for funding by the Department of Energy (DOE).***

*** more details in features

UW STUDENT TEAM WINS XPRIZE AND MUSK FOUNDATION AWARD IN CARBON REMOVAL COMPETITION

A team of students from the University of Wyoming is a winner of the Carbon Removal Student Competition funded by XPRIZE and the Musk Foundation.

XPRIZE has announced that 23 student-led teams won the \$5 million Carbon Removal Student Competition, which is part of the \$100 million XPRIZE for carbon removal supported by the Musk Foundation. The competition was launched, in part, to fund early-stage concepts from the next generation of carbon removal innovators and to remove barriers to entry for those interested in the main competition.

The UW team — **Shane Heavin**, of Rock Springs; **Danielle Jones**, of Gillette; **Anna Savage**, of Greybull; and **Lander Stone**, of Laramie — submitted a project proposal in the category of Measurement, Reporting and Verification Technologies to improve the design of existing carbon soil gas monitoring sensors created and produced by Earth Platform Systems (EPS).

The team will receive a \$100,000 award to discover ways to improve the design; to incorporate it into other environments and uses; and to lower costs of production and make it more widely available.

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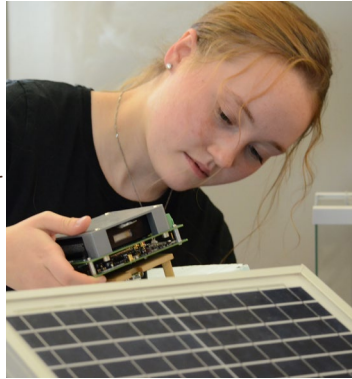
STUDENT PROFILE: JULIANA SANTARELLI

Women in science technology, engineering, and mathematics (STEM) fields have made significant strides in recent years to increase representation and participation. The School of Energy Resources (SER) is proud to facilitate the critical role of girls and women in the scientific and technological communities through the Energy Resources Management and Development (ERMD) degree.

A native of Colorado, **Juliana Santarelli** decided to attend the University of Wyoming because of the small town feel and positive learning experiences that result from the close-knit campus community.

Always attracted to STEM, she began her undergraduate degree as a petroleum engineering major, but quickly switched over to the School of Energy Resources when she realized she wanted a broader energy education.

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HIGHLIGHTS CONT.

Research Centers of Excellence Cont.

- The **Shell 3D Visualization Center** team, **Kyle Summerfield**, **Phil Black** and **Patrick O'Toole** had their 'workforce development and immersive technology' abstract accepted to THE CAAV 2021 conference. The team are looking forward to presenting their work with Gillette College on using ground based LiDAR technology to capture surface mines, and their creation of virtual reality training environments to support hazard awareness in the surface mine workplace.

Academics

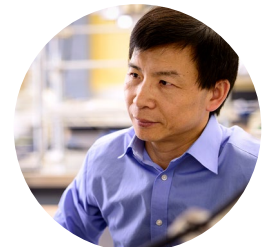
- Academics hosted the Professional Landman (PLM) Advisory Board meeting on campus. UW's PLM program is 1 of only 10 American Association of Professional Landmen (AAPL) accredited undergraduate programs in the country.



- SER Professor of Law **Tara Righetti** represented UW in Glasgow, Scotland, for the latest round of climate talks—the twenty-sixth Conference of the Parties (COP26). [Read More >>>](#)



- SER Professor of Engineering **Maohong Fan** was listed among the most 'Highly Cited Researchers' for 2021 by the prestigious Clarivate Analytics. [Read More >>>](#)



*** more details in features

HIGHLIGHTS CONT.

General Announcements

- SER Executive Director **Holly Krutka** presented at the 2021 Safety & Workforce Summit for the Wyoming Department of Workforce Services.
- SER has issued a Request for Proposals (RFP) for co-Directors to lead the Nuclear Energy Research Center. The deadline for proposal submissions is November 19, 2021. The selected Directors will be notified by December 3, 2021.

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- SER raised \$10,175 on UW's Annual Giving Day! Funds supported included the Director's Discretionary Fund, the Student/Faculty Travel Fund, and the Student Scholarship Fund.

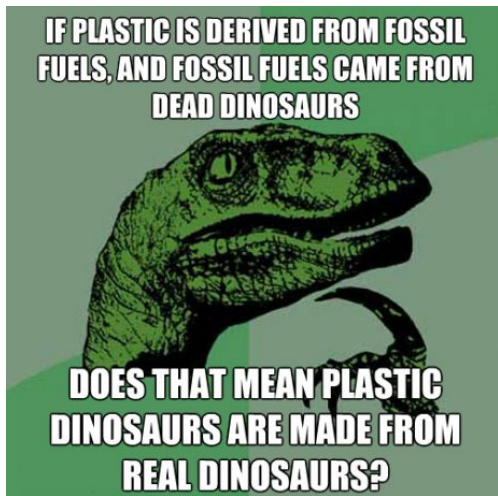


- The Petroleum Association of Wyoming's 2021 Wildlife & Reclamation Conference is being held on December 1, 2021 in Casper, Wyo. Anyone interested in attending the conference can still sign up here: <https://pawyo.org/reclamation-conference/>

ENERGY JOKE

IF PLASTIC IS DERIVED FROM FOSSIL FUELS, AND FOSSIL FUELS CAME FROM DEAD DINOSAURS

DOES THAT MEAN PLASTIC DINOSAURS ARE MADE FROM REAL DINOSAURS?



IMPORTANT DATES

- **Energy Resources Council Meeting**
November 18-19, 2021
- **Thanksgiving Break**
November 25-26, 2021
- **Bitcoin Town Hall Webinar**
November 30, 2021
- **SER Holiday Party**
December 4, 2021



Families welcome! Please RSVP to Trish!

- **Class of 2021 Graduation Reception**
December 11, 2021
- **Advanced Nuclear 101 Webinar**
December 13, 2021
- **CCUS Development in Wyoming Webinar**
December 16, 2021
- **Finals Week**
December 13 - 17, 2021
- **Winter Closure**
December 24 - January 2, 2021

WEBINAR PANEL DISCUSSION



FEATURING:

THURSDAY, DECEMBER 16, 2021
10:00 - 11:30 AM

Register Here: <http://www.uwyo.edu/ser/events/event-registration2.html>

CCUS Background and Wyoming CarbonSAFE Project Update
Dr. Fred McLaughlin, University of Wyoming School of Energy Resources
Pore Space Leasing: Private and Federal Issues
Kris Koski, Enq. Long, Reimer, Winegar, Beppler, LLP
Leasing on State Lands
Tyler Sarno, Wyoming Office of State Lands & Investments
Class VI Permitting: Resources, Guidance and Approach
Lily Barlow, Wyoming Department of Environmental Quality
CCUS Financing
Kipp Coddington, Enq., University of Wyoming School of Energy Resources
Moderated by Scott Quillman, University of Wyoming School of Energy Resources



Carbon Capture, Utilization & Storage
Development in Wyoming