

January | 2021

PROFESSOR JOHN KASZUBA NAMED WOLD CHAIR RECIPIENT



The University of Wyoming has named **Professor John Kaszuba** as the recipient of the John and Jane Wold Centennial Chair in Energy.

A UW School of Energy Resources (SER) professor in the Department of Geology and Geophysics, Kaszuba specializes in the area of fluid-rock interactions.

Established in 1990, the Wold Chair boasts a rich history as the first fully funded endowed academic chair at UW. The mission of the Wold Chair is to advance energy-related research and teaching for the benefit of Wyoming, with a focus on recipients who demonstrate a dedication to student instruction.

Named to honor the legacy of John and Jane Wold, the chair recognizes their leadership in energy development and their love for the state. Earlier this year, the Wold Foundation made a generous gift to enhance the prominence of the endowed chair, making it one of the university's most prestigious awards.

[Continue Reading >>>](#)

RACIAL COVENANT PROJECT

Professor Kris Koski and a group of our Professional Land Management students started a project a few years back to remove racist covenants from subdivisions in Cheyenne. While these covenants are no longer enforceable, the students utilized their land skills to work to remove them, including going door-to-door to get signatures from homeowners to support amending the covenants and removing the racial restrictions.

Due to COVID-19, the project has stalled. However, Professor Koski has continued to bring awareness to the situation and was interviewed over the break by a Cheyenne news station.

[Listen to the full interview >>>](#)

HIGHLIGHTS

Academic Program

- Spring classes will resume beginning January 25, 2021.

Research Centers of Excellence

- The *Center for Energy Regulation and Policy Analysis (CERPA)* plans to submit a proposal pitch to the United States Air Force as part of the Reimagining Energy for the DoD Showcase event in the topic area of Energy, Culture, Policy and Education.
- *CERPA* is seeking research papers and topics for a virtual energy conference to be held in June 2021. Proposals are due February 1, 2021 and completed papers by May 15, 2021. **More Info**
- The *Center for Economic Geology Research (CEGR)* scientists submitted two DOE grant proposals on Carbon Ore, Rare Earth Elements, and Critical Minerals (CORE-CM) in collaboration with the UW Department of Geology and Geophysics, the UW College of Engineering, and the UW College of Business. Please congratulate our hard working research scientists!
- *CEGR* has published and made public seismic data from the Rock Springs Uplift. The data can be found in the **UW Libraries Mountain Scholar Database**.
- The *Center for Carbon Capture and Conversion* is developing coal-derived carbon building materials from Powder River Basin coal pyrolysis products.***

*** more details in features

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



School of
Energy Resources

ECO-FRIENDLY HIGH-PERFORMANCE BUILDING MATERIAL DEVELOPMENT FROM COAL

The Center for Carbon Capture and Conversion (CCCC) is developing coal-derived carbon building materials from Powder River Basin coal pyrolysis products. Two proposed building products – coal char bricks (CCB's) and as a bi-product, structural support units (CSU's), are being developed, each containing at least 70% carbon derived from coal. These products have the potential to be transformational, providing superior physical and mechanical properties than conventional materials, while being manufactured at low cost with minimal carbon footprint, in accord with industry standards. Capturing just a small share of the current CCB market (concrete blocks and clay bricks), would consume over 30 million tons of Wyoming coal annually, while making coal derived CSU's to substitute for wood frames, reinforced concrete and steel structural members could utilize a further incremental volume equivalent to 1.5 million tons of coal annually, if 1% market share was captured.

The CCCC has leveraged Wyoming legislature support to successfully apply for DOE funding for this project. The project will be led by Associate Professor of Civil & Architectural Engineering, Dr Gang Tan as the Principal Investigator.

Funding: DOE: \$467,620; Non-DOE: \$116,879; Total: \$584,499

Char-based concrete brick (CCB)



The center plans to then build two reduced-scale demonstration buildings in the summer of 2021 — one from the coal-derived building materials, and the other from conventional building materials. The model buildings will allow researchers to assess the performance (mechanical properties, thermal insulation, installation properties) of the developed building products in real weather conditions.



HIGHLIGHTS CONT.

Faculty

- Professor Moahang Fan's research turning coal powder into graphite in a microwave was highlighted in an article by UW media. **Read Here**
- Professor Kris Koski was interviewed about racial covenants that exist in Cheyenne.***
- Prior to the holiday break, Professor John Kaszuba was named the recipient of the John and Jane Wold Centennial Chair in Energy.***

Shell 3D Visualization Center

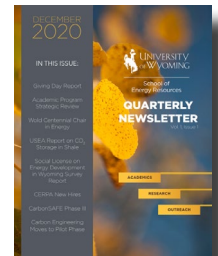
- *The Shell 3D Visualization Center* is seeking Departmental 3D Visualization Champions, as well as offering invitations to collaborate in the new 2.0 version of the center. The aim of these partnerships is to support dynamic and innovative teaching and research activity, both internally and through external, faculty-led grant projects.

General Announcements

- A reminder to complete your COVID-19 Training for the spring semester if you plan to be on campus. Training can be found in your Employee Learning Center on WyoWeb.

Deadline: January 25

- Dr. Holly Krutka published an article Clean Energy Journal by the Oxford University Press highlighting some of the ongoing projects and cutting-edge research taking place in SER! **Read Here**
- In case you missed it, the SER Quarterly Newsletter went out to our partners and stakeholders before the break, highlighting everything that happened in the final quarter of 2020. You can find it on our **website**, or click on the image.



*** more details in features

UW ENERGY PROJECT AWARDS

In addition to the Department of Energy (DOE) investment in the eco-friendly high-performance building material development from coal project in the CCCC, another UW department received funding from the DOE in a similar area of interest. The Department of Engineering received an award for their plans to develop an innovative, facile, low-temperature, cost-effective, and environmentally friendly technology for producing high-value coal-derived quantum dots (CQDs). The CQDs will be evaluated for two-example application, such as solar cells for clean energy production and photo catalysis for clean air and health protection.

PROFESSOR TIM CONSIDINE RELEASES ECONOMIC REVIEW OF RESTRICTIVE FEDERAL LAND POLICIES



Professor Tim Considine published a report for the Wyoming Energy Authority that explored the potential impacts of a federal leasing and drilling ban on the Wyoming economy.

The study, funded from the Wyoming legislature, explores two potential scenarios under the new presidential administration — a possible moratorium on new federal leases for oil and gas companies or a full drilling

ban on onshore federal lands.

The study concludes that either of these scenarios would pose severe difficulties for Wyoming, with potential losses in employment, reduced investment in new oil and gas wells, and losses in energy production.

The full report can be found on the [WEA's website](#).

DEPARTMENT OF ENERGY FUNDING OPPORTUNITIES AND REQUESTS FOR INFORMATION

Request for Information (RFI) Critical Minerals Sustainability. This RFI seeks input in the following areas: geologic and mineral characterization, mining, mineral processing, and metallurgical industries; end-user technology manufacturers using critical minerals and rare earth elements.

More Info >>>

Funding Opportunity Announcement: Emerging CO₂ Storage Technologies: Optimizing Performance Through Minimization of Seismicity Risks and Monitoring Caprock Integrity. **FOA Announcement >>>**

Notice of Intent: Fossil Energy Based Production, Storage, Transport and Utilization of Hydrogen Approaching Near-Zero or Net-Negative Carbon Emissions. **NOI Announcement >>>**

RFP AWARDS

The School of Energy Resources leads an extensive research portfolio that spans carbon capture, use and storage; creating novel, non-energy products from coal; advancing coal beneficiation; and working towards commercial development of Wyoming's mineral wealth such as rare earth elements and critical minerals. In addition to SER's existing research program, part of our mission is to encourage Wyoming-focused research across UW. To accomplish this, SER released a request for proposals (RFP) for seed research funding to be completed in the Spring 2021 semester. The ultimate goal of this seed funding is to support small projects and therefore enable the principal investigators to have sufficient information and tools to pursue external research grants, ultimately growing the foundation of work focused on Wyoming-energy driven economic development. The following projects were funded under the recent SER RFP:

Carbon Capture, Use and Storage

Biomass and Coal Co-Firing of Flameless Pressurized Oxy-Combustion for Carbon-Negative Power

Principal Investigators: Dr. Erica Belmont (Mechanical Engineering) and Dr. Michael Stoellinger (Mechanical Engineering)



High-Value "Blue" Light Olefin Production from Biomass and CO₂ with Negative Carbon Footprint

Principal Investigators: Maohong Fan (Chemical/Petroleum Engineering), Laura Rita de Sousa Oliveira (Chemistry), and Haibo Zhai (Civil Engineering)

Seismic Waveform Inversion by Deep Learning-One Key Tool toward Attaining A Carbon-Neutral Future

Principal Investigator: Subhashis Mallick (Geology and Geophysics)

Rare Earth Element Extraction

REE Availability and Mineralogy in Wyoming Uranium Roll-Front Deposits: Potential Rare Earth Element Extraction

Principal Investigators: Simone E. Runyon, Assistant Professor (Geology and Geophysics)



Energy Economic Development and Impact

Economic Impact Assessment Framework for Energy Transitions: Jobs & Taxes in Wyoming Communities

Principal Investigators: Christelle Khalaf (CBEA), Benjamin Cook (CBEA)



Wind

Real-Time Small Signal Stability Assessment of the Power System with High Wind Power Integration
Principal Investigators: Nga Nguyen (Electrical and Computer Engineering), John W. Pierre (Electrical and Computer Engineering)



Hydrogen Storage

A Nuclear Magnetic Resonance (NMR) Method for Hydrogen Storage Measurements in Carbon-Based Porous Substrates

Principal Investigators: Vladimir Alvarado (Chemical Engineering), Heng Wang (SER) and John Ackerman (Chemical Engineering)



Development of High-Performance Computational Fluid Dynamics Tools for Wyoming's Hydrogen Deployment Planning
Principal Investigator: Maysam Mousaviraad (Mechanical Engineering)

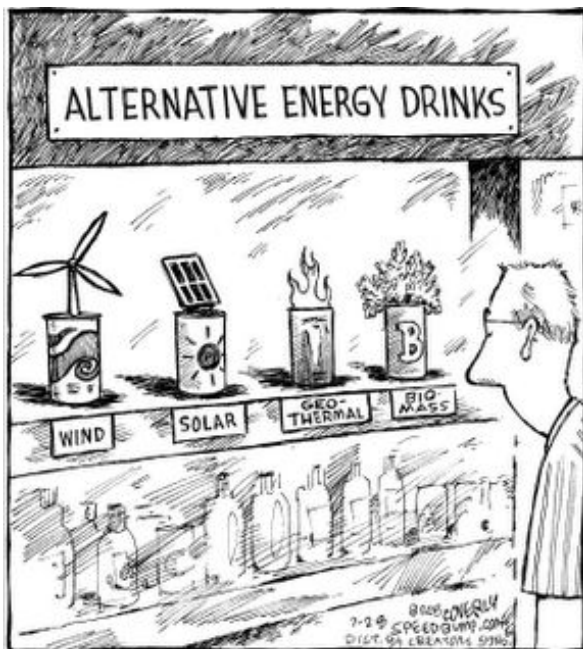
Covalent Organic Framework/Nanomaterial Composites for Hydrogen Storage

Principal Investigator: Bruce Parkinson (Chemistry)

Multifidelity Optimization of Doped-Graphene Single Atom Catalyst for Hydrogen Evolution Reaction

Principal Investigators: Lars Kotthoff, Prof. Patrick Johnson, Prof. Dilpuneet Aidhy, and Dr. Hud Wahab Artificially Intelligent Manufacturing (all PIs are in the AIM Center in the College of Engineering and Applied Science)

ENERGY JOKE (For those doing a January detox)



3D VIZ CENTER CREATES VIRTUAL REALITY SIMULATION TOOL FOR SOIL SCIENTISTS

The Shell 3D Visualization Center is developing a virtual reality simulation tool for Dr. Karen L. Vaughan of the Dept. Ecosystem Science and Management. The tool will support training materials for soil scientists and will aid understanding of the linkages between geomorphology, soils, hydrology and ecosystems. Below is an image generated from the simulation tool.



IMPORTANT DATES

- **Administrative Holiday: Equality Day**
January 18, 2021
- **UW Alumni Association Energy Network Town Hall**
January 21, 2021 | 5:30 - 6:10 PM | ZOOM
- **Spring Classes Commence**
January 25, 2021
- **Administrative Holiday: President's Day**
February 15, 2021
- **Next ERC Division Reports Due**
March 2, 2021
- **Next ERC Meeting**
March 18-19, 2021
- **Next All Staff Meeting**
March 23, 2021 | 9:00 am - 10:00 am
Mark your Calendars!