



ADVANCING ENERGY TOGETHER

The University of Wyoming School of Energy Resources is an interdisciplinary entity tasked with developing the fundamental knowledge, technologies and human resources necessary to solve the critical energy challenges society faces today. Each School of Energy Resources Center of Excellence serves as a hub to unite academia, government and industry in cooperation for the advancement of its focus area.

School of Energy Resources



Center for Fundamentals of Subsurface Flow



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The Center for Fundamentals of Subsurface Flow (CFSF) advances scientific understanding of subsurface flows and develops the tools and knowledge necessary to predict its behavior – an essential component of both carbon recovery and storage. The results of the center’s fundamental research, in the form of published experimental data and predictive modeling software, provide key insight into energy problems significant to the State of Wyoming, the nation and the world.

Because multiphase and multicomponent flow and transport phenomena are still poorly understood, there are limited strategies for both hydrocarbon extraction and geological storage of CO₂. CFSF has the unique ability – thanks to University of Wyoming faculty expertise, research alliances, and private and public funding – to ensure present and future access to unconventional oil and gas reserves, as well as long-term storage of environmentally damaging fluids.

The results of CFSF activities are far-reaching: graduates of affiliated energy programs will use their knowledge to make improvements in a variety of settings, while the center itself will be able to provide services and real-world applications for its ongoing, fundamental research. The center’s current research, such as the principles behind use and sequestration of CO₂ in enhanced oil recovery, is already being utilized by other research centers at UW and will be subject to broader field-scale testing and potential regulatory adoption.

RESEARCH

- Physics of subsurface flow
- Physically-based modeling
- Computational algorithms/high performance computing
- Analytical/numerical models for multiscale multiphase flows
- Multiphase flow experimentation in porous media
- Applications of the above

EDUCATION

- Provide graduate and postdoctoral opportunities
- Support short and long-term exchange programs
- Establish significant training environment

OUTREACH

- Provide services for related academic institutions, government entities and industry clients
- Conduct workshops and seminars
- Publish original research in scientific journals
- Collaborate with other universities and institutions
- Maintain a website with access to research, publications and experimental data
- Develop physically-based models and predictive software in partnership with sponsoring companies/agencies
- Generate high quality data through relevant and well-characterized flow experiments

FOUNDING MEMBERS/SPONSORS

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