



University of Texas at Austin; UT researchers pushing innovative solution at DOE's Hydrogen Earth Shot kickoff

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2021 SEP 10 (VerticalNews) -- By a News Reporter-Staff News Editor at Chemicals & Chemistry -- Researchers from The University of Texas at Austin are pushing an innovative combination of in-situ combustion and carbon dioxide storage to turn untapped oil into clean hydrogen energy. Researcher Ian Duncan, who leads the Earth Systems and Environment group at the UT **Bureau of Economic Geology**, will discuss the method at the U.S. Department of Energy's Hydrogen Shot kickoff symposium on Aug. 31 and Sept. 1. Registration for the virtual symposium is available [here](#).

"Our aim is to produce relatively cheap hydrogen while sequestering CO2 elsewhere in the reservoir," Duncan said. "This would produce carbon-free hydrogen from an energy source that otherwise would remain unused."

U.S. Secretary of Energy Jennifer M. Granholm announced Hydrogen Shot in June as the first of DOE's Energy Earthshots Initiative. The program's goal is to reduce the cost of clean hydrogen by 80% to \$1 per kilogram in one decade. This is part of the DOE's plan to accelerate the development of abundant, affordable and reliable clean energy within the decade. Achieving this will help reach the goal of net-zero carbon emissions in the United States by 2050.

Duncan's research is part of the State of Texas Advanced Resource Recovery (STARR) program's work to mitigate the impact of the coming energy transition on the Texas economy.

"Approximately half the oil in reservoirs in the U.S. remains in the ground and most will never be produced using current technologies and prices," Duncan said. "Texas is well-positioned to take advantage of subsurface hydrogen production as it has huge resources of oil, a well-developed oil field infrastructure, and an extensive network of pipelines and rights-of-way."

Duncan's team is developing new approaches using high-performance computing technologies available through the Texas Advanced Computing Center to simulate multiphase flow and thermal effects that are essential to hydrogen production. The team's research focuses on using in-situ, or on site, combustion of oil within the natural reservoir as a heat source. That heat is used to drive the conversion of methane, carbon monoxide and other gases into hydrogen and carbon dioxide in a way that Duncan said emulates the industrial processes of gasification and steam reforming in refineries.

"Energy has been transitioning from lower density carbon fuels to higher-density hydrogen for over a century," said Scott Tinker, director of the **Bureau of Economic Geology**. "This research fits very well into continuing that progression."

Registration for DOE's Hydrogen Shot Summit is open. The summit will convene stakeholders online to introduce the Hydrogen Shot program, solicit dialogue, and rally the global community on the urgency of tackling the climate crisis through concrete actions and innovation. DOE will share results from its recent Request for Information and obtain feedback on pathways to achieving the Hydrogen Shot's "1 1 1" goal of \$1 for 1 kg of clean hydrogen in 1 decade. Breakout sessions on various clean hydrogen production pathways as well as deployment and financing will help identify key challenges and potential strategies to address them.

Topics include:

The UT research team includes scientists from the **Bureau of Economic Geology** and the Hildebrand Department of Petroleum and Geosystems Engineering. The bureau is a research unit of the UT Jackson School of Geosciences.

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