

Environmental and Water Resources Engineering Seminar Series Presents:

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Thursday, October 22, 2026 from 3:30–4:30 pm in

EER 1.528

Zoom Link: <https://utexas.zoom.us/j/84804724445>

Advancing Subsurface Strategies for Decarbonization and Energy Sustainability

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Abstract

An overarching grand challenge is to enable a sustainable future in which our world's energy needs are met while protecting natural resources. This calls for a transformative use of the subsurface environment. In this century we will vastly expand underground activities that mitigate climate change – for energy storage, permanent disposal of greenhouse gases, and sustainable energy production. These activities require extensive understanding of fluids like hydrogen (H_2) and carbon dioxide (CO_2), and their reactivity with minerals in porous media. In this talk, you will hear about advancements in geochemistry and mineralogy, which have led to novel strategies for CO_2 sequestration, reliable containment of fluids, and H_2 generation. Synchrotron X-ray spectroscopic imaging reveals complexity in mineral reactions at scales down to the nanometer. Paired with geochemical and reactive transport modeling, we have gained new insights on how mineral reactions can either hinder or actively advance strategic decarbonization.



EWRE Seminar Committee Members: Alexandra Stephens, Diego Castellano, Ella Junker, Tyler Trimble

Supervising Faculty: Blair Johnson



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