Physics - Geophysics; Researchers from University of Texas Austin Report Recent Findings in Geophysics (Scaling of Imbibition Front Dynamics In Heterogeneous Porous Media)

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2020 SEP 1 (VerticalNews) -- By a News Reporter-Staff News Editor at Physics Week -- A new study on Physics - Geophysics is now available. According to news reporting originating from Austin, Texas, by VerticalNews correspondents, research stated, "We report a quantitative study on the dynamics of countercurrent imbibition in fractured rock samples with the application of CO(2)geosequestration, as the rock matrix is saturated with CO(2)and brine exists in the adjacent microfracture. Direct pore-scale simulations of spontaneous and forced imbibition in a three-dimensional heterogeneous porous matrix enable us to capture the effect of microscopic properties on the imbibition dynamics as these pore-level descriptions are ignored in the existing coarse-grained models."

Financial supporters for this research include Gulf Coast Carbon Center, GAAC researcher grant by the **Bureau of Economic Geology** (BEG), Jackson School of Geosciences, the University of Texas at Austin, Texas Advanced Computing Center (TACC).

Our news editors obtained a quote from the research from the University of Texas Austin, "We have established new scaling classes for the propagation of the center of mass of the imbibition front and fluid-fluid interface broadening. It has become evident that the wettability is a major factor which leads to anomalies in these scaling laws."

According to the news editors, the research concluded: "While the governing capillarity under the water-wet condition induces fast roughening dynamics of the interface, the adverse effect of capillary pressure under the intermediate-wet condition leads to a damping effect on the imbibition front fluctuations."

For more information on this research see: Scaling of Imbibition Front Dynamics In Heterogeneous Porous Media. Geophysical Research Letters, 2020;47(14):. Geophysical Research Letters can be contacted at: Amer Geophysical Union, 2000 Florida Ave NW, Washington, DC 20009, USA. (American Geophysical Union - www.agu.org; Geophysical Research Letters - www.agu.org/journals/gl/)

The news editors report that additional information may be obtained by contacting Sahar Bakhshian, University of Texas Austin, Bur Econ Geol, Jackson School of Geosciences, Austin, TX 78712, United States. Additional authors for this research include Margaret Murakami, Seyyed Abolfazl Hosseini and Qinjun Kang.

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