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A data driven model for the impact of IFT and density variations on CO_2 sequestration in porous media MOHAMMAD NOMELI, AMIR RIAZ, University of Maryland — CO_2 storage in geological formations is one of the most promising solutions for mitigating the amount of greenhouse gases released into the atmosphere. One of the important issues for CO_2 storage in subsurface environments is the sealing efficiency of low-permeable cap-rocks overlying potential CO_2 storage reservoirs. A novel model is proposed to find the IFT of the systems (CO_2/brine-salt) in a range of temperatures (300-373 K), pressures (50-250 bar), and up to 6 molal salinity applicable to CO_2 storage in geological formations through a machine learning-assisted modeling of experimental data. The IFT between mineral surfaces and CO_2/brine-salt solutions determines the efficiency of enhanced oil or gas recovery operations as well as our ability to inject and store CO_2 in geological formations. Finally, we use the new model to evaluate the effects of formation depth on the actual efficiency of CO_2 storage. The results indicate that, in the case of CO_2 storage in deep subsurface environments as a global-warming mitigation strategy, CO_2 storage capacity are improved with reservoir depth.

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