CERE
Center for Energy Resources Engineering

CERE – SEMINAR

Thursday 28 October 2021
09:15 to 10:00 a.m.
Online from link in calendar invitation or please contact Christian Ove Carlsson, cc@kt.dtu.dk
(Wienerbrød will be served from 9:00, please bring your own coffee/the)

"Pore-Scale Investigation of Water-Shielded Oil Recovery by Gas Injection"

By

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Abstract

After water flooding in oil reservoirs, a major part of oil remains behind in the form of immobilized pore-scale ganglia surrounded by water, especially in water-wet media. When gas is injected into such a system, the water barrier impedes direct contact between the blocked oil and the injected gas. Instead, gas dissolves in water and reaches the oil on the other side by diffusing through water. The non-flowable oil swells gradually due to gas diffusion and displaces the water barrier slowly, until it is completely removed after a certain time. In our research, we performed a number of experiments on glass micromodels containing water and pure or multicomponent oil-gas systems to simulate a simplified version of the actual water removal process in the reservoir. I will present some of the experimental observations along with the results obtained from modeling of the diffusion process using classical Fick's law and Maxwell-Stefan theory.