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We are pleased to anounce that **Jenny Kim** and **Daniel Sivira** will give a presentation this **Tuesday 2nd May, 13.15-14.00 in room P13:**

Title: Experimental Investigation of EOR by Injecting SiO2 Nanoparticles as Water Additive with Application to the Hebron Field

Abstract:

First oil is expected from the Hebron Field in 2017, being the fourth offshore development in Newfoundland and Labrador, Canada. The enhanced oil recovery methods in the Hebron Field must be investigated early on, as only 30% of the initial oil in place is considered recoverable. This experimental work focuses on injecting silicon dioxide nanoparticles as a water additive to enhance oil recovery (EOR) with application to the Hebron Field.

The work in the Hibernia EOR Lab regarding nanoparticle EOR looks at stabilising the nanoparticles in sea water, characterising their effect on interfacial tension reduction, change in wettability, and impact on incremental oil recovery. Seawater collected from Grand Banks, offshore of Newfoundland and Labrador is used for waterflooding, and to disperse the silicon dioxide nanoparticles. One goal of this research is to evaluate the ability of silicon dioxide (SiO2) nanoparticles to modify the wettability of predominately quartz based sandstones as well as sandstones with increasing calcium carbonate like the Ben Nevis Formation. The experiments were conducted using Berea and Bandera standard cores to mimic the mineralogy of the Ben Nevis Formation lower and upper facies, respectively. Water imbibition followed by oil drainage were carried out according to standard procedures in centrifugal core holders with overburden pressure. The cores were then aged to restore the wettability of the cores to reservoir conditions. After which the core plugs were then aged in a stable solution of silicon dioxide (SiO2) nanoparticles and brine for different periods of time. Finally, the wettability of the core plugs was measured at reservoir conditions (62°C and 19.00 MPa). Likewise, IFT is examined as a function of nanoparticle concentration, stabilising HCl, and temperature. Core flooding experiments were designed to examine the efficacy of SiO_2 nanoparticles to enhance oil recovery as a function of rock type and SiO_2 nanoparticle concentration and timing of nanoparticle usage (secondary or tertiary). The core flooding experimental results between standard cores resembling the Hebron reservoir characteristics and core samples from Hebron Field will be compared, once experiments are complete.