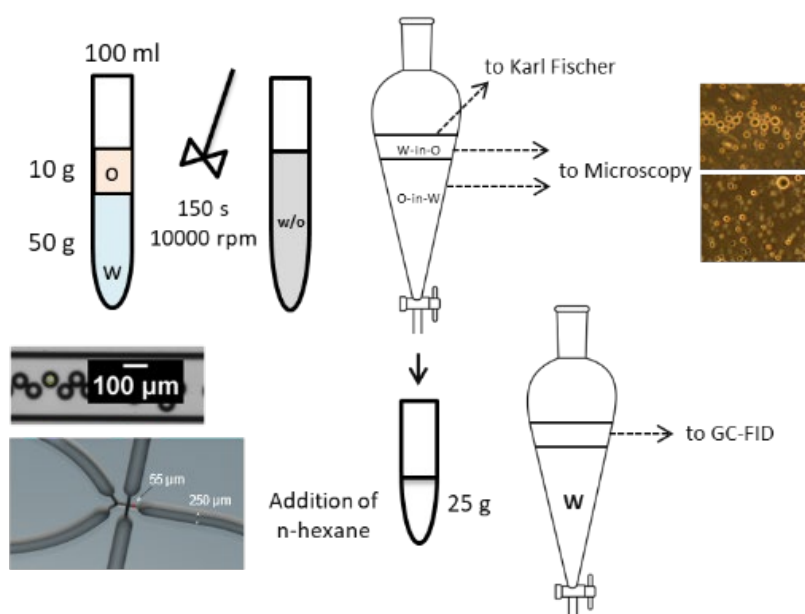


INVESTIGATION ON THE EFFECT OF FILM FORMING CORROSION INHIBITORS ON OIL-WATER EMULSIONS USING GRAVITY SETTLING AND MICROFLUIDIC EXPERIMENTS

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In this study, we combined the results of w/o separation from gravity settler with microfluidics to evaluate emulsion stability under addition of film forming corrosion inhibitors (FFCIs). A model oil was used consisting of stearic acid added to a mixture of equal mass ratio of decane and dodecane. The aqueous phase, representing a simplified model of an oilfield brine, was 50 g/L of NaCl in demineralized water. Five FFCIs, three of them from Tween family (Tween 20, 80, and 85) and two commercial ones, were included in the experimental plan, together with a system without any production chemical. The gravity settling experiments were run for 5, 10 and 30 minutes of settling times and complemented with microscopy observation. The coalescing tendency of the oil droplets was also investigated using a microfluidic technique, with the same brine as the continuous phase and the same chemicals. The results of the experiments, obtained with different techniques, are in qualitative agreement and include the concentration of the dispersed phase, the droplet size-mass distribution, the coalescence frequency, and the behavior of the oil droplets in the aqueous phase. Both HLB and HLD concepts showed potential in prediction of w/o emulsion separation. This work emphasizes the importance of a correct chemical selection in reducing the oil content in water.



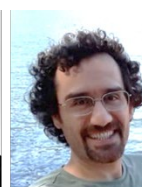
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