Quantification of the recovered oil and water fractions during water flooding laboratory experiments

During core flooding experiments where water is injected in residual oil saturated core plugs, the fluids are often produced in small amounts. Oil and water come out of the core and are collected in glass vials using a fraction collector. Quantification of these fluids is often difficult since the volume might be less than a few microliters. In this study, we approach the determination of the oil volumes in flooding effluents using predetermined amounts of the North Sea oil with synthetic seawater. The UV/visible spectroscopy method and low-field NMR spectrometry are compared for this determination, and an account of advantages and disadvantages of each method is given. Both methods are reproducible with high accuracy. The NMR method was capable of direct quantification of both oil and water fractions, while the UV/visible spectroscopy quantifies only the oil fraction using a standard curve.

General information
Publication status: Published
Organisations: Department of Civil Engineering, Section for Geotechnics and Geology, Center for Energy Resources Engineering, Department of Chemical and Biochemical Engineering, CERE – Center for Energy Resources Engineering
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Number of pages: 5
Publication date: 2015

Host publication information
Title of host publication: Proceedings of the 77th EAGE Conference & Exhibition 2015
Source: PublicationPreSubmission
Source ID: 108589129
Research output: Chapter in Book/Report/Conference proceeding > Article in proceedings – Annual report year: 2015 > Research