

# Phase behaviour and Related properties of Mixtures of Solvents and Heavy Oil - Report VISTA Biannual 2011.doc

Biannual report VISTA 2011

## Project title

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Post-doc/ scholar: Bjorøy, Ørjan

Project duration: 01.11.09 - 31.10.13

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Division head: Last name, First name

Project number: 6347

## Object

This project aims at determining the phase behaviour of solvent/heavy oil mixtures, i.e. phase volumes, distribution coefficients as well as density and viscosity of the phases, and to use these data to improve and modify PVT and viscosity modelling tools. As stated, the first object of this project is to experimentally determine the phase behaviour of solvents, i.e. *n*-alkanes, and the heavy oil provided by Statoil.

## Status:

Asphaltenes, when occurring in the laboratory, may be regarded as a solid phase created when a liquid with low solubility power (typically *n*-pentane or *n*-heptane) is added to the oil. Further studies on the effect of temperature on asphaltene precipitation have been undertaken. This has been necessary to complete a manuscript which we intend to publish in connection with the upcoming Petrophase 2011 conference. Necessary testing and optimization of experimental procedures has been performed in the intention of up-scaling the precipitation process or working with pressurized samples. Modifications of the modified Scale cell currently located at the Statoil Research Centre Sandsli has been done with the intent of using this instrument for further studies on heavy oil - solvent mixtures at different pressure and temperature. Some initial experiments have been performed showing the presence of two-phase behaviour. Further studies and continuously betterment of the instrument is in progress.

## Other activities:

Complex Reservoir Fluids - New Developments and Multi-Disipline Integration (Workshop, 1.6 units, SPE, Amsterdam)