Bachelor* and Master Thesis project proposals For spring 2010

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* The stated projects are initially suitable for master thesis; however some of the projects as indicated could be adjusted to be a bachelor thesis project.

1) CO_2 Related projects

I. Thermodynamic behavior of CO_2/CH_4 binary mixture during transportation and injection into oil reservoirs.

The work is aimed to understand phase behavior associated with temperature and pressure changes. The work is extension of previous study on CO_2. Master thesis project

II. CO_2 sequestration/enhancing oil Recovery

Reducing CO_2 emission to air by injection to enhance oil recovery is an activity that is ongoing at our laboratory. Sequestration of CO_2 is one of most growing research areas to understand the thermodynamics and kinetics of the interaction between injected CO_2 with fluids and rocks. The challenge in this project is quantification and testing hypothesis. The work will be closely conducted in collaboration with PhD studies in our group. The work is mostly theoretical and simulation. Master thesis / bachelor

I I I Interfacial and Fluid/Rock (chalk&SS) Interaction Phenomena in Presence of Natural Surfactant (asphaltene) at Elevated temperature

This study is experimental work and is related to water flooding to enhance oil recovery. IFT and other available techniques will be used in this study to understand the interfacial behavior as a function of temperature.
Bachelor project

2) Projects related to heavy oil

I. Thermal recovery of heavy oil by (Steam Assisted Gravity Drainage) SAGD with Solvent

This study is to address the factors that affect the heavy oil recovery emphasizing on SAGD/Solvent recovery approach. Our previous work has shown a possibility to use the negative effect of solvent on temperature propagation in reservoir, as steam is injected, to increase oil recovery. The objective of this work is to address and generalize the developed hypothesis. The work is simulation and modeling of thermal recovery. Master thesis project.

I I. PVT_Characterization of heavy oil

This work is a continuation to further develop the approach for minimizing the uncertainty dealing with heavy oil and plan for future experimental work. Master thesis project.

3) Production optimization

In this work involves on production and artificial lift optimization for an existing production field operated by Statoil. Possible problems associated with artificial lift in for particular reservoir fluid will be simulated taking into account possible formation damage. Master thesis project.

4) Dynamic simulation

Two simulation projects aimed at understanding transient conditions imposed by operation and/or reservoir. The first project is the dynamic wellbore simulation to assess behavior of some wells operated by Statoil. The second project is studying the effect of different production scenarios of fluid behavior in reservoir.

5) Open for other industrial projects within area of expertise.