http://www.sfiface.no

FACE

The Norwegian Flow Assurance and Innovation Centre

MSc thesis suggestions

Near wall particle induced turbulence effects

The presence of particles in fluid flow can have a dampening or enhancing effect on the turbulence level of the carrier fluid. FACE is currently working on generating new fluid-particle velocity correlations based on experimental results in order to improve the way our computational models handle the presence of particles in the flow. The aim of the MSc thesis is to perform detailed measurements of the particle and fluid velocities in the near wall region in both channel and pipe flow. The thesis will focus on experiments in the laboratory followed by data and image processing. Experiments will be performed at both the Institutt for Energiteknikk (IFE) and the University of Oslo (UiO). The candidates are expected to share their time between IFE and UiO.

Supervisors: Atle Jensen (UiO), Gustavo Zarruk (IFE).

Measurements of particle-wall interaction in turbulent suspension flows

Erosion in Oil&Gas pipelines represents a significant challenge to the industry. FACE is working on models that includes the two-way interaction between particles and fluid in pipelines. Two essential parameters needed to improve our knowledge of particle fluid interaction near the walls are the impact angle and particle velocity. In this project the student will process existing experimental data and generate correlations to improve the exiting models. The thesis will involve data and digital image processing, and limited laboratory work. The candidates are expected to share their time between IFE and UiO.

Supervisors: Atle Jensen (UiO), Gustavo Zarruk (IFE).

Interested candidates are invited to discuss these opportunities with Dr. Gustavo Zarruk (+47-63806210, gustavo.zarruk@ife.no) or Dr. Atle Jensen (atlej@uio.no)

The FACE SFI

FACE was initiated in August 2007 with the vision of *combining surface and colloid chemistry with fluid mechanics to solve flow assurance challenges.* Its objective is to *deliver world class applied and fundamental research and education focused on production, transportation and separation of complex well fluids*.

To achieve the FACE objective, a main goal was set: to develop **generic methods** to describe **complex fluid systems** in models that can be incorporated into scalable and robust multiphase flow assurance tools needed by the petroleum industry to develop new production solutions for oil and gas with complex fluids. The two terms **generic methods** and **complex fluid systems** basically define and focus the work carried out within FACE.