



# COLLOQUIUM

In accordance with article 4.6.8 of the SSNS-wb.

Group: Engineering Fluid Dynamics

As part of his MSc thesis assignment

**Ivo Matthijs van Selm**

will give a presentation, entitled:

## **Flotation Methods for Emulsified Oil in Water**

**Date: Friday, September 3, 2010**

**Time: 15:00**

**Room: HC101**

### **Summary:**

Induced air flotation is a technique used in the oil, food, water cleaning and mining industry to separate dispersed particles and drops from a liquid phase. Gas bubbles are produced by a capillary at the bottom of the flotation vessel. Upon attachment of the dispersed phase to the bubbles, the dispersed phase is transported to the surface. At the surface, the floating dispersed phase is removed by skimming or solvent extraction.

The reported research has been conducted at Royal Dutch Shell, which operates multiple flotation vessels located at oil production sites around the globe. In the present study a laboratory scale, batch-operated, flotation column has been developed at Shell Amsterdam. This experimental set-up, within acceptable bounds, replicates commercial operating conditions of flotation units. Since it is expected that produced water may be contaminated by polymers and surfactants, added to the well in order to extract a higher percentage of the oil from current reservoirs, the effect of these species on the flotation process has been investigated as well.

The operating separation efficiency of the experimental set-up has been determined for oil-in-water emulsions in the presence of polymers and surfactants. The validity of the results has been assessed and physical explanations for the observations have been developed, which yielded new insights on the challenges that have to be faced in the development of full-scale flotation processes.

### **Assessment committee:**

Prof.dr.ir. H.W.M. Hoeijmakers (chairman)  
Ir. D.F. van Eijkeren (mentor)  
Dr.ir. M.A. van Dijk (supervisor Shell)  
Ir. P.H.J. Verbeek (mentor Shell)  
Dr.Ir. N.P. Kruyt  
Dr.ir. H.T.M. van den Ende

### **Chairman:**

d.d. August 16, 2010