

# Åsmund Ervik

## Curriculum Vitae

Jarveien 75C

7072 Trondheim, Norway

☎ +47 970 03 466

✉ [asmund.ervik@ntnu.no](mailto:asmund.ervik@ntnu.no)

Male, born 1988, married, one daughter

## Education

2013– **PhD in computational physics**, NTNU, Trondheim.

prelim. title *Mathematical modelling and numerical simulation of the interfacial behaviour of water droplets dispersed in crude oil and subjected to an electric field*

supervisors Prof. Bernhard Müller and Dr. Svend Tollak Munkejord

My PhD work is part of a joint-industry project called “Electrocoalescence III”. The aim is to model the behaviour of water droplets in crude oil, when an external electric field is applied. Part of the challenge for both experiments and modeling is to have a fluid which behaves like crude oil, but is well characterized and understood. Chemical substances on the interface, such as surfactants or asphaltenes, are a major piece to this puzzle.

2007–2012 **Physics and Mathematics**, NTNU, Trondheim, *Integrated MSc.*

Specialization Technical Physics, focus on quantum physics and computational physics.

### Master’s thesis

title *The local level-set extraction method for robust calculation of geometric quantities in the level-set method*

supervisors Prof. Ingve Simonsen and Dr. Svend Tollak Munkejord

## Job experience

2012– **Researcher**, SINTEF Energy Research, Trondheim.

Involved in projects in various disciplines of science and engineering. Have worked on e.g. calculations of thermodynamic properties of fluid mixtures for CCS purposes, optimization of systems for waste heat recovery, as well as two-phase fluid simulations for applications both in natural gas liquefaction and water-crude oil separation.

*Currently on leave for the duration of my PhD studies.*

## Scientific papers

### Journal papers (2)

- [1] **2014** (with Karl Yngve Lervåg and Svend Tollak Munkejord). “A robust method for calculating interface curvature and normal vectors using an extracted local level set”. In: *Journal of Computational Physics* 257, Part A, pp. 259–277.
- [2] **2013** (with Morten Hammer and Svend Tollak Munkejord). “Method Using a Density–Energy State Function with a Reference Equation of State for Fluid-Dynamics Simulation of Vapor–Liquid–Solid Carbon Dioxide”. In: *Industrial & Engineering Chemistry Research* 52.29, pp. 9965–9978.

### Conference papers (5)

- [3] **July 2014** (with Svein Magne Hellesø, Svend Tollak Munkejord and Bernhard Müller). “Experimental and computational studies of water drops falling through model oil with surfactant and subjected to an electric field”. In: *The IEEE 18th International Conference on Dielectric Liquids*. Bled, Slovenia.
- [4] **June 2014** (with Svend Tollak Munkejord and Bernhard Müller). “Extending a serial 3D two-phase CFD code to parallel execution over MPI by using the PETSc library for domain decomposition”. In:
- [5] **June 2013** (with H. Amrouche et al.). “Application of molecular simulation techniques to CCS activities”. In: *7th Trondheim CCS Conference*. Trondheim, Norway.
- [6] **July 2013** (with Amy Brunsvold and He Zhao). “Experimental methods for investigating the discrete droplet impact phenomena of a model fluid relevant for LNG heat exchangers”. In: *The ASME 2013 Fluids Engineering Summer Meeting*. Nevada, USA.
- [7] **Sept. 2011** (with Karl Yngve Lervåg). “Curvature calculations for the level-set method”. In: *Numerical Mathematics and Advanced Applications 2011*. 9th ENUMATH Conference. Leicester, England.