PhD scholarships (2) in Experiments and Modeling of High Pressure and High Temperature Reservoir Fluids

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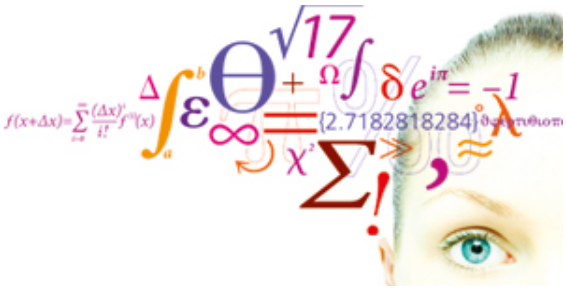

The positions are funded by the Danish National Advanced Technology Foundation under the project "New Extreme Oil and Gas in the Danish North Sea / NextOil DK". In this project, DTU CERE will collaborate closely with the Danish Geotechnical Institute (GEO), Maersk Oil and Gas, and DONG Energy to study issues related to high pressure and high temperature (HP/HT) petroleum reservoirs which are an abundant hydrocarbon resource but risky to develop.

The vision of NextOil is to add crucial knowledge to three aspects—rock mechanics, hydrocarbon reservoir fluids, and scaling—in the development of HP/HT petroleum reservoirs so as to reduce the related technical and economic risks and to convert the Danish HP/HT hydrocarbon resources into attractive commercial reserves. NextOil consists of three work packages (WPs) and the advertised PhD positions are within WP2 on hydrocarbon reservoir fluids and WP3 on scaling, respectively. WP2 will generate a more accurate description of the physical properties and phase equilibrium for HP/HT reservoir fluids through a combined effort of experimental studies and modeling work. WP3 will deal with the description of the mineral scaling due to water vaporization and the inversed Joule-Thomsen effect. In particular, the following areas will be investigated in WP2 and WP3:

- Measurement of fluid properties and phase equilibrium for HP/HT fluids (WP2
- Innovative characterization of reservoir fluids (WP2)
- Non-cubic equations of state for HP/HT reservoir fluids modeling (WP2)
- Inversed Joule-Thomsen effects (WP2/WP3)
- Experimental investigation of solid-liquid equilibrium at HP/HT conditions (WP3)
- Modeling of vapor-liquid-solid equilibrium at HP/HT conditions (WP3)

Qualifications
The applicants should have a master's degree preferentially in chemical engineering, chemistry, or petroleum engineering, or a similar degree with an academic level equivalent to the master's degree. Besides, the following qualifications are required for PhD positions 1 and 2, respectively:

PhD position 1:
The applicant is expected to have good knowledge of applied thermodynamics, competences in development of mathematic models, and skills in programming. The applicant may also be involved in some experimental measurements with a Postdoc under WP2. Willingness to do high pressure experiments and experiences in experimental work will be an additional advantage.

PhD position 2:
The applicant will be responsible for designing and requesting experimental equipment for measurement of crystallization and precipitation during in-situ oil production. A key parameter to be investigated is the Joule-Thomson coefficient. Knowledge of autoclaves and possible DSC are key skills to master. High pressure will be used; understanding of the difficulties working at these conditions is a must. The applicant should have a background in applied electrolytic thermodynamic modeling, preferably activity coefficients models.

Approval and Enrolment
The scholarships for the PhD degree are subject to academic approval, and the candidates will be enrolled in one of the general degree programmes of DTU. For information about the general requirements for enrolment and the general planning of the scholarship studies, please see the DTU PhD Guide.

Salary and appointment terms
The salary and appointment terms are consistent with the current rules for PhD degree students. The period of employment is 3 years.

Further information
Fur further information regarding PhD position 1, please contact Senior Scientist Wei Yan, weya@kemi.dtu.dk and Professor Erling H. Stenby, ehst@kemi.dtu.dk.

For further information regarding the second Ph.D. position, please contact Assistant Professor Philip L. Fosbøl, plf@kt.dtu.dk and Associate Professor Kaj Thomsen, kajt@kt.dtu.dk.

Application
The application must be received no later than **April 1, 2013** . Applications must be submitted as **one pdf file** containing all materials to be given consideration. To apply, please open the link "Apply online," fill in the online application form, and attach **all your materials in English in one pdf file**.

In the field *"Please indicate which position you are applying for"* please indicate whether you are applying for PhD position 1 or 2 or both.

Your application must include following documents:

- A letter motivating the application (cover letter).
- Curriculum vitae.
- Grade transcripts and BSc/MSc diploma
- Excel sheet with translation of grades to the Danish grading system (see guidelines and excel spreadsheet here)

The submitted applications will be considered for both positions. However, it is recommended that the candidates indicate in their application letters which position they prefer more.

Candidates may apply prior to obtaining their master's degree, but cannot begin before having received it.

All interested candidates irrespective of age, gender, race, disability, religion or ethnic background are encouraged to apply.

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