



PhD scholarships in the Flow Assurance and Scale Team (FAST)

The Flow Assurance and Scale Team (FAST) in the Institute of Petroleum Engineering at Heriot-Watt University is a 25 person strong team that conducts research on the prediction and prevention of oilfield scale. Scale deposits – such as calcium carbonate and barium sulphate - cause production difficulties by growing on metal surfaces (such as well bores) and in porous media (such as reservoir rocks), causing restrictions to fluid flow. The use of chemical scale inhibitors has been widely adopted as a method to control scale formation. Over 20 industrial companies have sponsored this research for many years, and further details can be found on the [Flow Assurance and Scale Team \(FAST\)](#) website.

The Energi Simulation Chair in Reactive Flow Simulation supports collaborative research initiatives between Heriot-Watt University and other universities on topics where component flow and chemical reactions in porous media are important. These include precipitation of oilfield scales (with FAST) and chemical Enhanced Oil Recovery (cEOR). PhD studentships are available in the broad laboratory and simulation based subject areas described below:

- Understanding the mechanisms by which inorganic scales form
- Understanding the mechanisms by which scale inhibitors prevent scaling and are retained on rock surfaces
- Visualisation of reactive multi-phase flow processes using 3D printed porous rocks
- Modelling of chemical reactions that occur in reservoirs that lead to scale deposition in oil wells
- Modelling of treatments to inject scale inhibitors into subsurface formations to prevent wells from scaling
- Multiscale modelling of polymer Enhanced Oil Recovery

Eligibility

Applicants should be educated to BSc or Masters degree level in a relevant scientific subject and demonstrate good English language skills, attention to detail, a disciplined and methodical approach to completing their workload, computer literacy, excellent communication skills and the ability to write reports, collate information and present it in a clear and engaging manner to academic and industry audiences.

The successful candidates for the "Multiscale modelling of polymer Enhanced Oil Recovery" project must have demonstrable C++ programming ability at expert level. This project will be conducted in collaboration with the Pore Network Modelling Group at Heriot-Watt University (Professor Steven MacDougall) and the University of Bergen (Professor Arne Skauge). Willingness to travel to Norway every six months is essential.

The successful candidates for the laboratory-based topics may be required to develop a number of skills from among the following list - scale inhibitor performance evaluation, core flooding, inhibitor/brine analysis (ICP, wet chemical), flow visualisation, recording and analysis. Although desirable, these skills are not essential prerequisites. The successful candidates for the modelling-based topics will be required to develop programming skills and the ability to run third party simulation codes.

Funding

Four fully funded PhD scholarships are currently available. The scholarships will cover tuition fees and provide an annual stipend of approximately £15,000 for the 36 month duration of the programme. The funding is available to UK, EU and international students.

How to Apply

Please complete our [online application form](#).

Please select PhD programme Petroleum Engineering and include the reference 'EGIS2017FAST' on your application. You will also need to provide a CV, a supporting statement, a copy of your degree certificate and relevant transcripts and one academic reference. You must also provide proof of your ability in the English language (if English is not your mother tongue or if you have not already studied for a degree that was taught in English). We require an IELTS certificate showing an overall score of at least 6.5 with no component scoring less than 6.0 or a TOEFL certificate with a minimum score of 90 points.

Informal enquiries should be addressed to Heather O'Hara at h.f.ohara@hw.ac.uk.

Deadline

The closing date for applications is 31 January 2018. Applications made after this date will be considered if candidates have other sources of funding.



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Director de Asuntos Internacionales
Guerrero #39 Entre Blvd Colosio y Calle Sonora
Tel. (662) 297600 EXT 2317

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Sonora Tel. (662) 297600
EXT 2355

LIC. GABRIELA MOLINA MORALES

Coordinadora Operativa de Programas Internacionales
Guerrero #39 Entre Blvd Colosio y Calle Sonora
Tel. (662) 297600 EXT 2317

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