Newcastle University PhD Studentship award

**Title**
Modelling of geothermal energy extraction

**Value of award**
100% of International tuition fees paid

**Number of awards**
1

**Start date and duration**
September 2019 for 3 years

**Application closing date**
8th February 2019

**Overview**
The aim of the project is to develop a robust framework to simulate the long-term production of enhanced geothermal reservoir through modelling.

Geothermal energy is currently believed to be one of the most advantageous sources of energy. Not only is it a **renewable type of energy** but is also present in most areas, outperforming even some **conventional sources** in many aspects. Due to its promising features, it has attracted overwhelming support in many countries/economic zones such as Australia, European Union, United States, Japan, South Korea and China and so on in the forms of both government policy and capital. The use of geothermal energy for generating electricity and heating/cooling will not create environmental consequences compared to conventional energies such as the fossil fuels which has emission of greenhouse gas and other pollutants. Overall, geothermal energy is considered to be green, reliable, sustainable, high efficiency and maintenance cost-effective, making it the one of the hottest energy sector in the 21st century. In the UK a construction of the world’s longest power connector between UK and Iceland is considered, which would deliver more renewable energy to 1.6 million British homes that do not have geothermal heat pumps. Moreover, the first commercial **geothermal power plant** is planned to be built in Cornwall, UK if all the necessary funds are obtained.

The objectives of the project will be: (1) to develop a proper constitutive model of the rock in reservoir which is buried far below the ground surface and under high in-situ confinement. (2) to implement the developed rock constitutive model and the coupling mechanism into numerical methods (finite element/different method); and (3) to simulate the production of EG reservoir at various stages from the initial production to its long-term performance.

**Sponsor**
Faculty of Science Agriculture and Engineering and Chinese Scholarship Council (CSC)

**Name of supervisor(s)**
Dr Yilin Gui, Dr Mohamed Rouainia, School of Engineering.
Eligibility Criteria
You must be a citizen and permanent resident of the People’s Republic of China at the time of application.

You should be a master graduate or nearly granted a master degree. However, very talented BEng, BSc graduate in relevant areas will also be considered.

English language skills (if English is not your native language): an overall score of IELTS 6.5 or equivalent, with individual scores of 6.0 in each of the four sub-skills: writing, reading, speaking and listening.

How to apply
You must apply through the University’s online postgraduate application system. Apply here. To do this please ‘Create a new account’. All relevant fields marked with a red asterisk must to be completed.

The following information will help us to process your application. You will need to:
• Insert the programme code 8040F in the programme of study section
• Select PhD Civil Engineering (full time) - Civil Engineering (Geotechnical) as the programme of study
• Insert the studentship code CSC1809 in the studentship/partnership reference field
• Attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code CSC1809 and state how your interests and experience relate to the project.
• Attach degree transcripts and certificates, if English is not your first language, a copy of your English language qualifications

Contact
For further detail, please contact Dr Yilin Gui (yilin.gui@ncl.ac.uk)