

Postdoctoral Fellow - Geomechanical Modelling



- Apply your advanced modelling skills to cutting-edge geothermal energy research
- Excellent development opportunity with targeted career advancement plan
- Build your research career at CSIRO - World-class science, world-class connections!

The position:

Current research at CSIRO Earth Science and Resource Engineering is supporting the aim of achieving energy production from geothermal resources at a scale which will have substantial impact on the Australian and Worldwide energy supply. This requires a deep understanding of the fluid-rock interactions that govern the evolution of geothermal reservoirs.

We are offering an exciting opportunity for a Postdoctoral Fellow to model the coupled interaction between geothermal reservoir rocks and the fluids that are circulated through them, in order to produce heat to the surface. The modelling will focus mainly on inclusion of geomechanical coupling with reservoir geochemistry in a thermodynamics framework that currently includes thermo-hydro-mechanical (THM) processes. The successful candidate will work as part of a multi-disciplinary and interactive team, located in sunny, rapidly growing Perth on the south-west coast of Australia. As part of your research activities, you will have the chance to interact with other researchers and collaborators across the country.

Specifically you will:

- extend the theory of continuum damage mechanics to cover chemically sensitive geo-materials based on irreversible thermodynamics;
- apply the fully coupled framework of multi-physics to predict precipitation and crystallisation pressure induced fracturing of the reservoir rock;
- explore the implications of coupled feedbacks between reactive transport and other physical processes (mechanical, thermal, and hydrological);
- implement the obtained formulations numerically and assess their validities;
- collaborate with, and gather knowledge from, a large multi-disciplinary team located across various sites in Australia.

Location: Kensington (Perth) Western Australia

Salary: AUD75K - AUD82K plus up to 15.4% superannuation (pension fund)

Tenure: 3 year term

Ref No.: WA00900

To be considered you will hold a PhD and have documented research in a relevant discipline (e.g. mechanics, thermodynamics, geochemistry, applied mathematics, geosciences).

You will also have:

- good interpersonal skills and the ability to effectively interact with collaborating scientists;
- the ability to conceive and conduct innovative research and publish the findings in high-quality peer-reviewed journals;
- the ability to formalize and analyse complex real-world interactions in mathematical form;
- numerical programming and modelling experience.

Owing to terms of the fellowship, candidates must not have more than 3 years of relevant Postdoctoral experience.

About CSIRO:

The **Commonwealth Scientific and Industrial Research Organisation (CSIRO)** is Australia's national science agency and one of the largest and most diverse research agencies in the world. By igniting the creative spirit of our people we deliver great science and innovative solutions for industry, society and the environment. www.csiro.au

CSIRO Earth Science and Resource Engineering (CESRE) provides science and engineering solutions for the continuing growth of Australia's resources industry whilst delivering benefits to the economy, society and the environment.

CSIRO prefers all applications to be lodged via our Online Careers Portal – <http://www.csiro.au/careers>. Choose "Positions Vacant" and search for Vacancy Number **WA00900**.

Closing date: Sunday 25 September, 2011 (11:30pm Perth time)