

Job description

Post title and post number	Research Fellow- 47748
Organisation advertising Description	School of Geography, Earth and Environmental Sciences

Job summary

The post is part of a large NERC consortium project entitled “Hydromechanical and Biogeochemical Processes in Fractured Rock Masses in the Vicinity of a Geological Disposal Facility for Radioactive Waste” led by Prof Robert Zimmerman. The project brings together researchers in hydrogeology, geophysics, geochemistry and rock mechanics to develop an integrated understanding of coupled processes affecting radionuclide migration in fractured rocks near the tunnels of a Geological Disposal Facility for nuclear waste.

The purpose of this post is to undertake high quality research investigating the migration of colloids and attached radionuclides by developing detailed models of the Colloid Formation and Transport (CFT) experiment in the Grimsel Test Site operated by NAGRA in Switzerland.

Previous research has developed the detailed flow and tracer transport model of the experiments. The next step is to represent colloid and radionuclide interaction with the mineral phase and radionuclide attachment/detachment from the bentonite colloids used in the experiment. This is a unique opportunity to work on extremely detailed experimental data collected by NAGRA and KIT experimental scientists. This new post aims to extend the detailed understanding of coupled colloid and radionuclide migration by working in a team to incorporate appropriate level of detail of the colloid and radionuclide chemistry. Working with modellers and hydrogeologists, the post will extend the new numerical methods to represent geo-chemical couplings that control the contaminant migration through fracture system of a fault zone intersecting the experimental tunnels at Grimsel.

The project will be supervised by Alan Herbert and John Tellam at the University of Birmingham and will be undertaken in collaboration with Imperial College and University of Leeds. The work will be undertaken primarily at the University of Birmingham.

Main duties

The responsibilities may include some but not all of the responsibilities outlined below.

- Develop research objectives and proposals for own or joint research, with assistance of a mentor if required
- Contribute to writing bids for research funding
- Analyse and interpret data
- Apply knowledge in a way which develops new intellectual understanding
- Disseminate research findings for publication, research seminars etc

- Support the supervision of students on research related work and provide guidance to the PhD student working on the project
- Contribute to developing new models, techniques and methods
- Undertake management/administration arising from research
- Present research outputs, including drafting academic publications or parts thereof, for example at seminars and as posters
- Deal with problems that may affect the achievement of research objectives and deadlines

Skills and Experience

- First degree in area relevant to modelling of radiochemistry or geochemistry and have, or expect to receive soon, a higher degree relevant to research area or equivalent qualifications.
- Experience with colloid chemistry is desirable.
- High level analytical capability, and the aptitude for development and application of numerical modelling techniques
- Ability to communicate complex information clearly
- Enthusiasm to work in multidisciplinary team with hydrogeologists and engineers

Equal Opportunities

The School of Geography, Earth and Environmental Sciences is an equal opportunities employer and holds an Athena Swan Bronze award. Female and BME staff are under-represented in the School and so we would particularly value applications from such candidates. The School welcomes applications from candidates looking for flexible part time/job share arrangements as part of the appointment. Professor Eva Valsami-Jones is available to discuss the School's equal opportunities policies (e.valsamijones@bham.ac.uk; 0121 4145537).