



Faculty of Environment
School of Earth and Environment,
Earth Surface Science Institute

Marie Curie Initial Training Network MINeral Scaling Research Fellow

Full time, fixed term for 2 years

Research Project: In situ nucleation and growth kinetics of carbonates and oxalates with inhibitors

You will work on a European Union (EU) funded Marie Curie Initial Training Network project in **MINeral Scaling (MINSC)**. The goal is to derive molecular level knowledge regarding the effect and role of inhibitors on the formation of calcium carbonates and oxalates. You will employ state-of-the-art synchrotron-based scattering and diffraction techniques combined with high-resolution imaging and quantify the kinetics and mechanisms of the nucleation and growth of these phases in the absence and presence of inhibitors and as a function of changing pH, saturation and T conditions. As part of the training, opportunities for research secondments to other **MINSC** partners as dictated by the research programme are strongly encouraged.

You are expected to publish research papers and to present your research at national and international meetings, and interface with other MINSC fellows and partner teams.

You will have a PhD in Geochemistry/Mineralogy, Inorganic Chemistry, or Material Sciences preferably including experience in aspects of synchrotron-based scattering and diffraction. You should have a demonstrated publication record, excellent communication skills, the ability to work as part of a team, and good laboratory experimental skills related to mineral synthesis and characterization.

EU eligibility criteria: You must not have resided in the UK for more than 12 months in the last 3 years. You cannot have more than 5 years of research experience since the completion of your Masters degree (including the time required to complete a PhD).

You should be able to commence 15 Feb 2013 or as soon as practicable thereafter.

Salary: Fixed at €61,971 per year, plus additional Marie Curie mobility allowances, which will be paid in Sterling using an appropriate conversion rate.

Informal enquiries may be made to Prof. Liane G. Benning, tel +44 (0)113 343 5220, email l.g.benning@leeds.ac.uk.

Further information about the School can be found at; www.see.leeds.ac.uk/ and the project at; www.see.leeds.ac.uk/minsc/index.htm .

Closing Date: 1 September 2012

Job Description

Responsible to: Head of School

Reports to: Professor Liane G. Benning

Main Duties and Responsibilities

- Design and implement novel experimental approaches for the *in situ* and time resolved synthesis of mineral phases, specifically carbonates and oxalates
- Develop new methods for high-resolution imaging of phases using cryo-techniques
- Use small and wide angle scattering techniques, combined with high-resolution imaging and other laboratory techniques to characterize the reaction progress and products
- Represent MINSC as one of two postdoctoral fellows and liaise with other MISC colleagues as appropriate
- Develop new ways for efficient data processing and modelling of scattering data
- Prepare results for publication in peer-reviewed journals
- Help with supervision and guidance of other Cohen Group users in sample preparation, analysis and data interpretation
- Participate in MINSC network training and management meetings and discussions
- Present work at national and international conferences and workshops
- Plan and manage own research activity in collaboration with others and within the strategy identified for the project team as a whole
- Interact with, and provide assistance to, staff/students within the research group
- Carry out any other duties associated with the post as may arise from time to time

Career Expectations

The University of Leeds is committed to developing its staff. All staff participate in the Staff Review and Development scheme and we continue to work with individuals, supporting them to maximise their potential.

Progression to a higher grade is dependent on an individual taking on an increased level of responsibility. Vacancies that arise within the area or across the wider University are advertised on the HR website - <http://jobs.leeds.ac.uk> - to allow staff to apply for wider career development opportunities.

University Values

All staff are expected to operate in line with the university's values and standards, which work as an integral part of our strategy and set out the principles of how we work together.

More information about the university's strategy and values is available at <http://www.leeds.ac.uk/comms/strategy/>

Person Specification

Essential

- A PhD in geochemistry/mineralogy, inorganic chemistry or material sciences with specialisation in aspect of scattering, diffraction or high-resolution imaging
- Evidence of a budding research publication record (or evidence of forthcoming publications) in relevant topics
- Demonstrated knowledge and experience relevant to the synthesis and characterization of mineral phases
- Ability to work effectively in a team and independently
- Excellent communication and presentation skills
- Adaptability and flexibility to support evolving and constantly changing research needs
- Demonstration of self-motivation, organisation and a willingness to acquire new skills through training and personal development
- A demonstrable commitment to research, including:
 - Ability to identify research objectives
 - Independence/initiative in tackling research problems
- Ability to work under pressure and to meet deadlines

EU eligibility criteria: You must not have resided in the UK for more than 12 months in the last 3 years. You cannot have more than 5 years of research experience since the completion of your Masters degree (including the time required to complete a PhD).

For further clarifications please send a CV to Liane G. Benning for final eligibility checks (l.g.benning@leeds.ac.uk).

Desirable Criteria

- Experience in synchrotron-based techniques
- Experience in cryo-imaging approaches
- Experience in mineral growth kinetics with or without additives

Further Particulars

University of Leeds

The University of Leeds is one of the largest universities in Britain, with over thirty thousand students and more than six thousand staff, including over two thousand academic and academic-related staff. The University has departments in all major disciplines and is committed to developing a number of research areas as world class centres of excellence. This has involved identifying a number of 'gold peaks' of high quality research and developing strategic investment initiatives for these areas to enable them to develop further. The University has recently invested over £23 million in a new/refurbished building for the School of Earth and Environment.

School of Earth and Environment

The School of Earth and Environment is established as one of the leading centres of international excellence across the Earth and Environmental Sciences. In the UK RAE 2008, we ranked second nationally in terms of research power (the amount of internationally excellent and world-leading research outputs) for Earth and Environmental Sciences. The School comprises +90 academic staff and +60 postdoctoral researchers. In 2009/10 we attracted £8.5million in research funding and this figure is expected to exceed £10million for 2010/11.

The School mission is *"to lead internationally in research, to deliver a high quality of learning and teaching in Earth and Environmental Sciences and hence to beneficially impact society"*. This is supported by a School Strategy that aims to achieve international recognition for frontier research of global impact and influence and by building strong dynamic academic communities across the School. Strong research – teaching linkages are central to this aim with the School being home to over 1,000 students spread across a portfolio of undergraduate, masters and PhD programmes.

Earth Surface Science Institute

This is an institute of earth science researchers with a broad range of expertise falling into four natural groupings: Process Sedimentology; Paleontology; Environmental Geochemistry; and Engineering Geology and Hydrogeology. Research endeavours encompass the study of past and present environmental and climatic conditions and the processes that control them and produce change. Thus, we model river and turbidity current flow dynamics, study deep-sea vent communities, quantify groundwater systems, constrain nutrient fluxes in oceans, assess the causes of ancient mass extinctions and much more. Work ranges across all scales from the microscopic study of mineral growth and weathering to the global-scale study of iron cycling and the sulphur isotopic system of the oceans. The Institute also includes a strong group working on Engineering Geology and Hydrogeology whose interests overlap the Geochemists in the field of contaminated land and groundwater.

<http://www.see.leeds.ac.uk/research/essi/>

Institute for Climate and Atmospheric Science

ICAS, in the School of Earth and Environment at the University of Leeds, is an established and expanding group, representing one of the largest and most active Atmosphere and Climate research teams in Europe. We have around 100 research-active members, whose programme covers Atmospheric Dynamics, Aerosols, Cloud Microphysics, Atmospheric

Composition and Climate Change. In each of these areas, the Institute makes use of theoretical and numerical modelling on the full spectrum of scales, from cloud microphysics to global dynamics and chemistry. We maintain a long-term commitment to field measurement of atmospheric phenomena, including aerosols and chemistry as well as the physics and dynamics of weather systems. We also have well-established research collaborations with several UK and international agencies, including the Met Office, and we host the Directorate of the UK National Centre for Atmospheric Research (NCAS).

<http://www.see.leeds.ac.uk/research/icas>

Institute of Geophysics and Tectonics

The Institute of Geophysics and Tectonics is dedicated to understanding the structure and evolution of the Earth and neighbouring planets. Detection and measurement of resources in the crustal layer and understanding of geological hazard also are principal aims.

Measurement of gravity, magnetism, seismic waves and electrical properties, theoretical and computer modelling, surface structural mapping and petrological studies all contribute to these goals. Recently, in collaboration with the Faculty of Engineering, we have expanded applied research in petroleum engineering, seismology and structural geology.

<http://www.see.leeds.ac.uk/research/igt>

The Sustainability Research Institute

As a key part of the School of Earth and Environment, the Sustainability Research Institute (SRI) is home to a team of over 30 academic staff and 35 research students conducting inter-disciplinary research on the different dimensions of sustainability. Research within SRI is based largely on the environmental social sciences and draws upon aspects of geography, sociology, politics, planning, economics, management, development studies and science and technology studies. Our broader activities combine social and natural sciences in leading-edge, interdisciplinary research. SRI has received significant research funding from various sources, including the recent award of £5.5 million from the ESRC to establish the Centre for Climate Change Economics and Policy (in partnership with the LSE). As well as being a centre of excellence for inter-disciplinary research, SRI runs a range of postgraduate and undergraduate programmes on the different dimensions of sustainability.

<http://www.see.leeds.ac.uk/research/sri>

Research Laboratory Facilities

The School of Earth and Environment has recently invested in newly commissioned geochemical and atmospheric science laboratories as part of the new build. These world class research facilities embrace all aspects of earth and environmental science including atmospheric instrument and chemistry labs, laser facilities, geomicrobiology-, geochemistry instrument-, isotope geochemistry-, hydrochemistry-, clean- and radiochemistry- labs. Further, the co-location of these facilities in the new School facilitates access to a wide range of analytical services including ICPMS, XRD, IC and isotope analysis.

<http://www.see.leeds.ac.uk/research/facilities/>

Learning and Teaching

The School of Earth and Environment has a student population approaching 1000. We offer a wide range of undergraduate and MSc programmes within the broad areas of Earth Sciences, Environmental Science and Sustainability. We also offer two MRes courses and have a vibrant PhD community.

Our learning and teaching strategy is to:

1. Create learning opportunities for students to engage with Earth and Environmental research excellence.
2. Provide an exceptional student experience by delivering distinctive high quality modules and building academic communities.
3. Enhance student employability through building key skills and experience.

This strategy is delivered through high quality teaching supported by state-of-the-art equipment, facilities and resources. Strong links are made between research and teaching throughout the programmes, but in particular during projects and fieldwork.

<http://www.see.leeds.ac.uk/study/undergrad/>

<http://www.see.leeds.ac.uk/study/masters/>

<http://www.see.leeds.ac.uk/study/phd/>

Additional Information

Details of the terms and conditions of employment for all staff at the university, including information on pensions and benefits, are available on the Human Resources web pages accessible via the links on the right hand side, or at <http://www.leeds.ac.uk/hr/index.htm>

Criminal Record Disclosures

A Criminal Records Disclosure is not required for this position. However, applicants who have unspent convictions must indicate this in the 'other personal details' section of the application.

Disabled Applicants

The post is located in the School of Earth and Environment. Disabled applicants wishing to review access to the building are invited to contact the department direct. Additional information may be sought from the Recruitment Officer, email disclosure@leeds.ac.uk or tel + 44 (0)113 343 1723.

Disabled applicants are not obliged to inform employers of their disability but will still be covered by the Equality Act once their disability becomes known.

Further information for applicants with disabilities, impairments or health conditions is available in the applicant guidance.