Candidate Information

Position:	Research Fellow in the application of Porous Liquids to gas separation
School/Department:	Chemistry and Chemical Engineering
Reference:	21/109083
Closing Date:	Monday 16 August 2021
Salary:	£33,797 per annum
Anticipated Interview Date:	Tuesday 31 August 2021
Duration:	This is a fixed term contract position available for 18 months or until 28th February 2023 whichever is soonest.

JOB PURPOSE:

We are seeking to recruit a highly motivated and enthusiastic postdoc for a period of up to 18 months. The researcher will work in a team to design, synthesis and evaluate a new class of CO2-selective solvent ("porous liquids") for application in biogas upgrading. The job will be to provide in-lab chemical expertise to support the overall project. The researcher will build on our existing knowledge and expertise to synthesise, characterise and optimise new porous liquid formulations which are designed to selectively dissolve CO2 in the presence of methane. Measurement of gas solubilities will also be done in-lab to predict their performance in biogas upgrading. The researcher will work closely with a PDRA Engineer and the overall project will be to install a small upgrading unit at a biogas production site. This is a fantastic opportunity for the researcher to work within a vibrant multidisciplinary environment, interacting with colleagues from Chemistry, Chemical engineering and on a regular basis with our commercial collaborators.

MAJOR DUTIES:

1. To synthesis porous solids and porous liquid formulation based on them, to conduct all appropriate characterisation including measurement of gas solubilities and invent and optimise new porous liquids as required for the project to succeed.
2. To work with the collaborators within the consortium.
3. Participate in the development of the research strategy for within the research group.
4. Normal duties will apply, including the preparation of reports, presentations and research/journal papers and assisting in supervision of PhD/MEng students.
5. Develop and plan an area of personal research and expertise, and/or undertake research under supervision within a specific research project or as a member of a research team.
6. Design, develop and refine experimental apparatus, field research or experiments in order to obtain reliable data.
7. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to area of research.
8. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
9. Prepare, often in consultation with supervisor, material for publication international journals and presentations at international conferences.
10. Assist grant holder in the preparation of funding proposals and applications to external bodies.
11. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget. These might include organisation of project meetings and documentation, financial control, risk assessment of research activities.
12. Carry out occasional undergraduate supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
13. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.
14. Be an active research member of the project research team with the aim of delivery of the project objectives and contribute to the wider goals of CASE (The Centre for Advanced Sustainable Energy).
15. Contribute to the reporting requirements of the project funder (Invest NI).

Planning and Organising:

1. Plan for specific aspects of research programmes. Timescales range from 1-4 weeks in advance and contribute to research group planning.
2. Plan for the use of research resources, laboratories and workshops where appropriate.
3. Plan own day-to day activity within framework of the agreed research programme.
4. Plan up to a year in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
5. Coordinate and liaise with other members of the research group over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students.
2. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
3. Actively participate in the CASE Researcher Group.
4. Join external networks to share information and ideas.
5. Contribute to the School's outreach programme by establishing links with local community groups, industries etc.

ESSENTIAL CRITERIA:

1. Have or be about to obtain a PhD in Chemistry, Chemical Engineering or a related subject.
2. BSc (Hons) or equivalent, or higher in Chemistry or Chemical Engineering or related subject.
3. At least 3 years recent relevant research experience to include:
   • Recent experimental experience relevant to synthesis and characterisation of microporous solids.
4. Publication record commensurate with stage of career.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc.
7. A high level of literacy and scientific logic.
8. Excellent knowledge written and spoken English is required for report writing and presentations.
9. Demonstrable ability to prepare journal and conference papers.
10. Proven ability to meet deadlines.
11. Ability to communicate complex information clearly.
12. Ability to build contacts and participate in internal and external networks.
13. Proven ability to work effectively within a team.
14. Demonstrable intellectual ability.
15. Ability to assess and organise resources.
16. Willingness and availability to work for periods at a biogas production site.

DESIRABLE CRITERIA:

1. Demonstrable experimental experience of synthesis and study of porous liquids.
2. Demonstrable experience of measurement of gas uptake by solids or liquids.
3. Demonstrable experience of working on an industrially led project or project with considerable industry input.
4. Experience of working in an interdisciplinary team.
5. Experience of managing resources and project finances.

ADDITIONAL INFORMATION:

The project will be undertaken within the School of Chemistry and Chemical Engineering with occasional travel to a biogas production site.

This is a unique opportunity for a dynamic and ambitious researcher to pioneer a very new type of liquid solvent (porous liquid) toward a critical area of application (CO_2 removal). The successful candidate will provide the necessary chemistry expertise to design and develop appropriate porous liquids for selective CO_2 capture in the context of biogas upgrading (separation of CO_2 from methane). The researcher will work with the collaborators to demonstrate the applicability of porous liquids to CO_2 separation/capture which has future implications beyond biogas upgrading. The successful candidate will have the opportunity to work within a highly driven multi-disciplinary team of scientists, engineers from academia and industry; and benefit from a strong research-intensive collaborative network.

We are offering generous terms and conditions of employment, a wide range of benefits and facilities, in a family friendly working environment. Belfast is one of Europe's most friendly and fashionable regional capitals. Referred to as a 'treasure with an incredible atmosphere' (National Geographic Traveller), Belfast is reported to be the second safest city in the world (United Nations). With the lowest cost of living in the UK (Mercer.com 2014), Belfast offers a variety of cultural, sporting, educational and social opportunities.

Our University has established itself as the leading university for promoting good employment practice for its female staff and has been involved with the Athena SWAN initiative from its inception. Queen's was one of the first of two universities to be recognised with an institutional Silver award in 2007, and all of our SET Schools currently hold SWAN awards at Silver level or above. We are an equal opportunities employer and welcome applications from all sections of society we particularly welcome applications from suitably qualified women as there is an under-representation of females in this subject area.