

Candidate Information

Position:	Research Fellow
School/Department:	Chemistry and Chemical Engineering
Reference:	20/108380
Closing Date:	Monday 26 October 2020
Salary:	£33,797 to £40,322 per annum
Anticipated Interview Date:	Friday 6 November 2020
Duration:	12 months

JOB PURPOSE:

To undertake research in developing fluidic devices without moving parts and processes for intensifying advanced oxidation reactions using hydrodynamic cavitation. The aim is to develop intensified oxidative desulphurisation process using water as a solvent and a hydrodynamic cavitation reactor without using any moving parts. The project involves carrying out systematic experiments on oxidative desulphurisation as well as developing computational models to simulate the performance. The developed models of cavity dynamics and reaction engineering will be extended and applied for simulating and optimising desulphurisation. Experience of carrying out advanced oxidations using hydrodynamic cavitation and modelling is essential. Experience of using computational flow models will be desirable.

MAJOR DUTIES:

1. Plan and execute desulphurisation experiments.
2. Develop and apply analytical techniques to monitor oxidative desulphurisation experiments.
3. Develop computational models for simulating oxidative desulphurisation experiments.
4. Use computational models to guide experiments – design of experimental set-up.
5. Use experimental data to validate computational models.
6. Use validated computational models for optimisation of desulphurisation process.
7. Participate in the development of the research strategy.
8. Normal duties will apply, including the preparation of reports and research/journal papers and assisting in supervising of PhD students.

Planning and Organising:

1. Plan for the use of research resources, laboratories, and workshops where appropriate.
2. Plan own day-to-day activity within framework of the agreed research programme.
3. Plan in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
4. 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 with research colleagues and support staff on routine matters.
2. Make internal and external contacts to develop knowledge and understanding and form relationships for future collaboration.
3. Attend and contribute to relevant meetings.

ESSENTIAL CRITERIA:

1. Degree in chemical engineering or related engineering subject.
2. Hold a PhD in Chemical Engineering or a related subject.

3. At least three years research experience of using hydrodynamic cavitation for advanced oxidation processes at postgraduate or postdoctoral level.
4. Demonstrable experience of developing computational models of advanced oxidation processes based on hydrodynamic cavitation.
5. High quality publication record commensurate with stage of career.
6. Ability to design and to establish experimental set-ups.
7. Ability to contribute to broader management and administrative processes.
8. Be prepared to supervise and interact with PhD students.
9. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
10. Ability to communicate complex information clearly.
11. Ability to build contacts and participate in internal and external networks.
12. Excellent written and spoken English for report writing and presentations.
13. Ability to prepare journal and conference papers
14. Demonstrable intellectual ability.
15. Ability to assess and organise resources.
16. Willingness to work irregular hours as needed.

DESIRABLE CRITERIA:

1. Experience of designing and setting up experiments, particularly involving hydrodynamic cavitation.
2. Experience of characterising reactants, S containing species, intermediates and products using variety of analytical techniques (GC, XRF etc).
3. Experience of working in a multi-cultural team.