## Section 1
### Role Overview

<table>
<thead>
<tr>
<th><strong>Job title:</strong></th>
<th>Research Assistant or Research Fellow in Membrane Crystallisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vacancy reference:</strong></td>
<td>3385</td>
</tr>
<tr>
<td><strong>School/Professional Service Unit:</strong></td>
<td>School of Water, Energy and Environment / Cranfield Water Science Institute</td>
</tr>
</tbody>
</table>
| **Job type:** | Full time  
Fixed Term Contract for 18 months |
| **Hours of work:** | 37 hours per week, normally worked Monday to Friday  
Flexible working will be considered |
| **Salary details:** | **Research Assistant** (if PhD near to completion)  
£30,600 per annum  
**Research Fellow** (if PhD obtained)  
£33,309 per annum |
| **Line Manager:** | Professor Ewan McAdam, Professor of Membrane Science & Technology |
| **Start date:** | As soon as possible |
| **Closing date for applications:** | 23 August 2020 |
Section 2
About Cranfield University

As the UK’s only exclusively postgraduate university, Cranfield’s world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Cranfield’s distinctive expertise is in our deep understanding of technology and management and how these work together to benefit the world.

Find out more about Cranfield, our history, and our rankings and awards here.

Corporate Plan (415i)

Our corporate plan is designed to raise the ambition and enhance the distinctiveness of our University through our people (staff, students and alumni), the industry partners we work with and our unrivalled research facilities. To strengthen our distinctive position in higher education and to grow our University, we have raised our ambition through our 415i goals:

- 4 - 400 fully research-active staff
- 1 - deliver a UK top 10 learning experience
- 5 - achieve a 5% operating surplus
- i - impact, influence, international

What we value

We value ambition, impact, respect and community. These values inform how we work together and our relationships with our partners and students. We believe that success is not only about what we achieve, but how we achieve it. Our values help to define who we are, guide the way we work together and help to shape our decisions. Our shared values were developed with the active engagement of colleagues across the University:

www.cranfield.ac.uk
Ambition – We aim high. We do all we can to achieve excellence.

Impact – We change people’s lives. We make the world a better place.

Respect – We value everyone’s expertise. We support each other.

Community – We build and cherish our Cranfield community. We embrace diversity.

Our shared, stated values help to define who we are and underpin everything we do. Find out more here.

Section 3
About School of Water, Energy and Environment

Cranfield’s excellence in Water, Energy and Environment is recognised internationally. Industrial-scale facilities underpin our research and development in energy technologies, including biofuels, biomass for energy, carbon capture and offshore oil and gas. Our environment activities include internationally recognised centres of excellence in Environmental Risk and Futures, and Water Science. Agrifood has been a core area since taking over the National College of Agricultural Engineering in the 1970s and we own the soil map for England and Wales.

Visit the Cranfield website to learn more about the School’s current research activities, taught programmes and impact:

Learn more about Water

Learn more about Energy and Power

Learn more about Environment and Agrifood

About Cranfield Water Science Institute

**Cranfield Water Science Institute** (CWSI) has an international reputation for its transformational research and teaching in the science, engineering and management of water in the municipal, industrial and natural environments. We have been working in water for over 40 years. Our academic and research staff, including scientists, engineers, technologists, policy specialists and social scientists are engaged in delivering postgraduate teaching, research, consultancy and training in an international arena.

We run MSc programmes, supporting a large cohort of PhD research students, and we work closely with a range of clients across industry and government helping them to address their water challenges and move their businesses towards a more sustainable green economy.

Without appropriate management, whether for municipal supply, agriculture, industry, community development or maintenance of a sustainable environment, we risk over-exploitation and contamination of our planet’s most precious resource. Our core research activities are therefore focussed around seven main areas:

- Sewage works of the future
- Maintaining the flow
- Water and sanitation in low-income countries

www.cranfield.ac.uk
• Water for food in a changing world
• Membrane processes
• Catchment management
• Governance and asset management.

Our ethos is to provide an environment which is intellectually challenging, where research excellence is encouraged and where students, staff and ideas flourish.

Learn more about CWSI

Organisational Chart

School of Water, Energy & Environment

Chief Operating Officer – School SATM/SWEE

Directors of Research & Education

PVC-School of Water, Energy and Environment

Themes

Water
  - Centre for Competitive, Creative Design
  - Cranfield Water Science Institute

Energy and Power
  - Centre for Energy Systems and Strategy
  - Centre for Thermal Energy Systems and Materials
  - Centre for Renewable Energy Systems
  - Centre for Climate and Environmental Protection

Environment and Agrifood
  - AgriEpi
  - CHAPS
  - Cranfield Soil and Agrifood Institute
  - Centre for Environmental and Agricultural Informatics

Centres and Institutes

Executive Officer PVC-S

Environmental analytical facilities

Vacancy

Research Fellow in Membrane Crystallisation

Professor Paul Jeffrey
Director of Water

Ewan McAdam
Professor of Membrane Science and Technology

1 April 2019
The line manager for this post is Prof. Ewan McAdam. The post itself provides opportunities to work closely with other research groups working in water and wastewater and within the School (e.g. Agrifood Theme) and to support Cranfield’s growing portfolio of research and teaching in the fields of water and wastewater treatment.

Section 4
Job Details

Job Purpose

You will have a specific set of responsibilities within an established research project. There may be a combination of research and teaching, with appropriate organising and managing in support of these activities. The candidate will work as part of a team to advance knowledge of the basic separation principles underpinning membrane assisted crystallisation. The core objective of this position provide discrete mapping of the ‘metastable zone width’ to help evidence how membrane geometry, process hydrodynamics and membrane-solution chemistry each influence and control the kinetic trajectory for crystallisation, with an explicit focus on the governance over crystal nucleation at the membrane surface which can shift the primary mechanism for homogeneous or heterogeneous crystallisation.

Key Deliverables

<table>
<thead>
<tr>
<th>Description of Deliverables</th>
<th>% of time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Delivery and management of contract research and reporting tasks as specified by line-manager using methodology and techniques appropriate to research, e.g.</td>
<td>60%</td>
</tr>
<tr>
<td>1.1. scientific review of literature</td>
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<tr>
<td>1.2. investigations leading to the discovery of new knowledge</td>
<td></td>
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<tr>
<td>1.3. analysing and illuminating data, interpreting and bringing new insights through integration</td>
<td></td>
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<tr>
<td>1.4. application of knowledge in practice out of which new intellectual understanding emerges</td>
<td></td>
</tr>
<tr>
<td>2. Profile raising through authoring and submission of academic articles to high quality journals, and other industry publications</td>
<td>20%</td>
</tr>
<tr>
<td>3. Support colleagues in research student supervision, teaching and grant proposal writing</td>
<td>10%</td>
</tr>
<tr>
<td>4. Help expand similar activities and support business development internationally</td>
<td>5%</td>
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<tr>
<td>5. General</td>
<td></td>
</tr>
<tr>
<td>5.1. Take responsibility for organising resources and effective decision making in support of research and teaching</td>
<td>5%</td>
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</tbody>
</table>
Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the School and/or University.

### Planning and organising

You must adhere to delivering the research work within the time-scales set by your line manager and demanded by the fixed term contract which requires monthly review meetings and summary presentations and planning for the next month’s schedule.

You will be self-directed and well organised. You should be able to develop a forward research plan for yourself over both short and extended timescales. You should have excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality.

The role will involve short-term responsibilities such as day-to-day project management, interaction with the wider project team and organising project meetings. As different tasks will require different time periods for planning, flexibility and good coordination skills will be important.

Work will need to be clearly documented on a day-to-day basis, showing a clear development path for the project. On an ad-hoc basis you may be required to assist with other related projects where your skills may be relevant.

### Communicating and influencing

You will need to be able to demonstrate excellent inter-personal skills to communicate with staff from all organisations across a wide range of disciplines to discuss project methodologies and to interpret results.

You will be expected to be able to articulate information about your work in a clear and concise manner and to discuss problems constructively with your line manager and colleagues.

You will also need to be confident in engaging with stakeholders and key informants from the supply chain, water companies and water regulatory sectors. An active and collegiate team mentality is the expected norm at Cranfield.

You will be expected to communicate scientific results effectively through reports and presentations at national and international meetings/conferences, and to prepare articles suitable for publication in high-impact peer-reviewed journals. There is an expectation that at least three peer reviewed journal papers will be published from this project.
There will be opportunities to present project outputs at industry and science conferences through oral presentation and a need to be able to actively contribute to workshops, technical meetings and seminars. A confident approach to presentation and delivery is required.

**Problem solving**

You are expected to already be a confident and independent researcher. You will be expected to be able to work independently for most of the time, with reference to the line manager and other project colleagues for points of clarification.

You will be expected to think through and solve problems which may be encountered in terms of methodology, the analyses, and development of models and interpretation of results.

Most problems will be solved through experience and through the guidance and mentoring available. You will be expected to discuss problems constructively with the line manager or other colleagues.

You will be responsible for ensuring that appropriate risk assessments are carried out for any new procedures to meet the University specification.

**Decision making**

I) **Decisions you will take without reference to others**

- Day-to-day management and planning of on-going research within the overall specifications provided by the project terms of reference / proposal.
- Draft delivery of high quality research and reports to deadline and quality.
- Writing draft journal and conference papers.
- Preparing material for jointly authored papers and conference presentations.
- Active participation in the implementation of health and safety procedures in the areas in which you work.
- Drafting reports, minutes, actions and papers.
- Identifying, collating and communicating associated research papers and reports

II) **Decisions you will refer to your manager/colleagues**

- Developing new research ideas, proposals, consultancy work and identifying sources of funding.
- Balancing ongoing research commitments, project management and publication/proposal-related activities.
- Activities to enable the dissemination and exploitation of research results.
- Aspects potentially affecting the operation of the project or the outcome of the results, such that they will have influence on the success of the project meeting the goals.
- Budgetary issues related to research contracts.
- Decisions that involve modifications to contracted deliverables.
- Writing journal and conference papers – final submission.
- Research support for PhD and MSc students.

**Guiding framework**

The guiding framework for this role is the University’s Corporate plan – 415i.

www.cranfield.ac.uk
The School of Water, Energy and Environment’s Academic Plan is the principal reference point for all our activity and sets out our School ambitions, operating strategy and tone of delivery. It supports the University’s Corporate Plan which is focused on the application of scientific excellence in a financially viable operating environment.

There are established working practices, processes, systems and procedures that you will learn and must be used. Alterations to any of these must be agreed with the line manager. You can expect close support from the line manager in research, career development, mentoring, project management and publications/proposals.

Our performance and development review scheme provides a set of objectives agreed with the line manager for the year ahead and expected SMART targets.

Duties and responsibilities should be carried out with due regard and compliance with the General Data Protection Regulations, Health and Safety and the Equality Act 2010. All staff must conform to the requirements of the Financial Manual. The role will be subject to normal school and university systems and procedures. A very high emphasis is placed in particular on conformity with health and safety, environmental and ethical policies of the university.

There may be occasions when existing procedures may not cover new circumstances and where you need to work collaboratively with the Head of Department, academic staff and the Department administrators to develop new processes for the future.

You must respect the fundamental code of conduct for academic and scientific work. You may be privy to confidential information relating to staff and students and it is imperative that absolute discretion and confidentiality is shown at all times.

For specific projects, there will likely be documentation which will outline the tasks, milestones and deliverables related to the project. If applicable, the specific responsibilities of each of the participants in the consortium would also be outlined in a consortium agreement / grant agreement.

**Impact**

The role will be focused on meeting the aims and objectives of the project.

It is very important to conduct high quality research to maintain and enhance the reputation and performance of the institute and School. This will have impact on colleagues in related areas of research and could facilitate further internal and external collaborations.

No direct responsibility for budget or other staff / students is associated with this role. However, opportunities to co-supervise PhD / MSc students will be provided, and we expect all our post-doctoral researchers to take an active role within the Institute and more widely within the School to both inform others of their on-going work and to make best use of existing knowledge and expertise. There will also be scope to develop linked project bids and to work with colleagues in responding to research calls, as appropriate.

You will be expected to present work at national and international meetings/conferences and to write peer reviewed journal papers.
Facts and Figures

Cranfield University excels in strategic and applied research. In the latest 2014 Research Excellence Framework (REF), 81% of our research was considered ‘world leading’ or ‘internationally excellent’ in its quality. We also achieved a significant improvement in our grade point average at a time when the sector has improved its overall performance.

Cranfield was named as one of the biggest climbers in the Times Higher League Table for overall quality, moving up from 49th in 2008 to 31st in 2014. In the Agriculture, Veterinary and Food Science Unit of Assessment (UoA) 23% of our agrifood research considered to be world leading in its quality and world-leading or internationally excellent in its impact. This has moved us into the second quartile of universities within this UoA.

Our world class academics, with proven research records, are in constant touch with industry through research, consultancy and product development. 3,800 students from over 100 countries study either full- or part-time, or in parallel with their career. We have 14,500 continuing professional development delegates, and 43% of our students study part-time.

Section 5
Am I suited to this role?

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Essential</th>
<th>Desirable</th>
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<tbody>
<tr>
<td>Education / Qualifications</td>
<td>PhD (or near to completion) in Chemistry, Chemical Engineering, Environmental Engineering or related discipline</td>
<td>Bachelor's or Master's Degree in Chemistry, Chemical Engineering, Environmental Engineering or related discipline</td>
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<tr>
<td>Experience</td>
<td>Proven ability in assembling and testing laboratory testing equipment</td>
<td>Experience and demonstrated success of building a research team and delivering research results.</td>
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<td></td>
<td>Extensive research experience in laboratory based experimental research.</td>
<td>Experience of supervising PhD students.</td>
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<td></td>
<td>High level analytical capability</td>
<td>Experience of supporting students, e.g. through research supervision, lecturing, tutorials)</td>
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<td></td>
<td>Preparing, editing and submitting high quality research outputs.</td>
<td>Experience of managing projects.</td>
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<td></td>
<td>Peer-reviewed publication track record</td>
<td>Presentation at major national or international conferences</td>
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<tr>
<td>Knowledge</td>
<td>Experience in delivery of training seminars, workshops, technical meetings</td>
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<tr>
<td>Sound knowledge of Membrane separation principles.</td>
<td>Knowledge of use of non-invasive direct observation methodologies</td>
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<tr>
<td>Sound knowledge of Crystallisation principles.</td>
<td>Knowledge of academic standards in UK higher education sector</td>
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<tr>
<td>Knowledge of recent research developments in the membrane field.</td>
<td>Close understanding of the contemporary challenges facing the water sector</td>
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<tr>
<td>Knowledge of recent research developments in the crystallisation field.</td>
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<table>
<thead>
<tr>
<th>Skills / Aptitudes</th>
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<tbody>
<tr>
<td>Ability to communicate complex information clearly, and to encourage commitment to learn in others</td>
<td>High quality lecturing skills</td>
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<tr>
<td>Excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality</td>
<td>Proven ability to develop business opportunities and attract research income from multiple types of client.</td>
</tr>
<tr>
<td>Excellent oral and written communication skills and presentation skills, and good technical writing skills in English</td>
<td>Skills in motivating colleagues and students.</td>
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<tr>
<td>Excellent team-working and interpersonal skills</td>
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<tr>
<td>Proven ability to undertake original research</td>
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<tr>
<td>Ability and “drive” to produce high quality manuscripts, with others.</td>
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<tr>
<td>Ability to find appropriate solutions to academic and technical problems</td>
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<table>
<thead>
<tr>
<th>Values</th>
<th></th>
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<tbody>
<tr>
<td>Ability to demonstrate our values: Ambition, Impact, Respect and Community</td>
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</tr>
<tr>
<td><strong>Other</strong></td>
<td>Due to the requirement to travel internationally you should have no travel restrictions on passport</td>
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</tbody>
</table>