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**Faculty of Technology**

**School of Mathematics and Physics**

**Research Fellow in Computational Solution of Models for Lithium-ion Batteries**

**ZZ005418**

**Information for Candidates**

**THE POST**

Please see the attached job description and person specification.

**TERMS OF APPOINTMENT**

Full-time

Fixed term

Salary is in the range from £35,211 to £38,460 and progress to the top of the scale is by annual increments payable on 1 September each year. Salary is paid into a bank or building society monthly in arrears.

Working hours are normally from 8.30 a.m. to 5.15 p.m. Monday to Thursday and 8.30 a.m. to 4.15 p.m. Friday with one hour and ten minutes for lunch. As this post is research based, working hours will vary depending on the needs of the project so a flexible approach is required. Specific working hours will be agreed once an appointment has been made. Overtime is not normally payable but time off in lieu may be given.

Annual leave entitlement is 35 working days in a full leave year. The leave year commences on 1 October and staff starting and leaving during that period accrue leave on a pro-rata basis. In addition, the University is normally closed from Christmas Eve until New Year’s Day inclusive and on bank holidays.

The Appointee will be entitled to join the Local Government Pension Scheme. The scheme's provisions include a final salary based, index-linked pension with an option to exchange some pension for a lump sum on retirement together with dependants’ benefits. Contributions by the employee are subject to tax relief.

There is a probationary period of six months during which new staff are expected to demonstrate their suitability for the post.

It is a condition of the appointment for the proper performance of the duties of the post that the appointee will take up residence at a location such that they are able to fulfil the full range of their contractual duties. This residential requirement will be expected to be fulfilled within twelve months of taking up the appointment. The University has a scheme of financial assistance towards the cost of relocation, details of which can be found on the University website:

<http://www.port.ac.uk/departments/services/humanresources/recruitmentandselection/informationforapplicants/removalandseparationguidelines>

There is a comprehensive sickness and maternity benefits scheme.

**All interview applicants will be required to bring their passport or full birth certificate and any other 'Right to Work' information to interview where it will be copied and verified.** The successful applicant will not be able to start work until their right to work documentation has been verified.

Please note if you are the successful candidate once the verbal offer of employment has been made and accepted, references will be immediately requested. It is the University’s policy that all employment covering the past three years is referenced. A minimum of two references is required to cover this three-year period of employment or study (where there has been no employment). One of your referees must be your current or most recent employer.

The successful candidate will need to bring documentary evidence of their qualifications to Human Resources on taking up their appointment.

To comply with UKVI legislation, non-EEA candidates are only eligible to apply for this post if it has been advertised for a total of 28 days.

If the position has a requirement for Disclosure and Barring Service check (DBS), this will be stated in the advert. The DBS Application Form will be provided once the selection process has been completed.

All applications must be submitted by 23:59 (UK time) on the closing date published.



**UNIVERSITY OF PORTSMOUTH – RECRUITMENT PAPERWORK**

1. **JOB DESCRIPTION**

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| **Job Title:** | Research Fellow in Computational Solution of Models for Lithium-ion Batteries |
| **Faculty/Centre:** | Technology |
| **Grade:** | 7 |
| **Department/Service:**  **Location:** | School of Mathematics and Physics  Lion Gate Building |
| **Position Reference No:** | ZZ005418 |
| **Responsible to:** | Dr Jamie Foster, Industrial Mathematics Group |
| **Responsible for:** | - |
| **Effective date of job description:** | March 2019 |

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| **Purpose of Job:** |
| The Research Fellow will work on the Multi-scale Modelling Project funded by the Faraday Institution and in doing so will join a consortium of researchers based at Imperial College London, University College London, and the Universities of Oxford, Southampton, Warwick, Birmingham, Bath and Lancaster. The work will involve close collaboration with this interdisciplinary team of external collaborators as well as with industrial partners.  The main role will be to develop a computational framework within which the group can test and validate models of lithium-ion battery behaviour.  The Multi-Scale Modelling project brings together world-leading battery experts with a broad set of skills at every level to build the critical bridge between science and engineering, working alongside UK industry to ensure that the work is innovative and delivers high impact. This consortium uniquely blends theoreticians with modellers, mathematicians and experimentalists, ensuring that the models developed are scientifically rigorous, computationally efficient and experimentally validated in parallel, to maintain a high degree of usefulness and accuracy. The first challenges to be tackled include fast-charging of batteries, low temperature operation and thermal management of cells within battery packs. |

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| **Key Responsibilities:** |
| 1. The development of the Contiuum Modelling framework in collaboration with the supervisor and external collaborators 2. To undertake regular travel to the collaborating groups to ensure coherency between the efforts in Portsmouth and elsewhere.   Additional expectations of the role holder:   1. To communicate with team members and liaise and network with relevant other professional bodies 2. To contribute to both internal and external project meetings providing relevant and timely information, in order to aid decision making 3. To solve problems that occur during the length of the research project applying knowledge of subject area 4. To contribute to seminars and discussions in the School. 5. To participate in and contribute to a performance & development review (PDR), ensuring that work produced is in line with the School/Faculty/University aims 6. To comply with the University's Health and Safety Policy and pay due care to own safety and the safety of others. Report all accidents, near misses and unsafe circumstances to line management 7. Any other duties as required by the Head of School. |

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| **Working Relationships (key individuals the job holder would be working with):** |
| Managed by Prof. Andrew Osbaldestin, Head of the School of Mathematics and Physics, Dr. Jamie Foster for day to day management. |

1. **PERSON SPECIFICATION**

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| --- | --- | --- | --- |
| **No** | **Attributes** | **Rating** | **Source** |
| **1.** | **Specific Knowledge & Experience** |  |  |
| 1.1 | Knowledge of the numerical methods used in the solution of partial differential equations | E | AF, S |
| 1.2 | Proficiency with computer programming | E | AF, S |
| 1.3 | Experience in writing research articles for leading international journals | E | AF, S |
| 1.4 | Knowledge of the electrochemistry of lithium-ion batteries | D | AF, S |
| 1.5 | Familiarity with electrochemical models of lithium-ion batteries | D | AF, S |
| **2.** | **Skills & Abilities** |  |  |
| 2.1 | Ability to plan, organise and prioritise workloads | E | AF, S |
| 2.2 | Good communication and interpersonal skills | E | AF, S |
| 2.3 | Writing research papers and/or project reports | E | AF, S |
| 2.4 | Excellent presentation skills | E | S |
| 2.5 | Project Management skills | D | AF, S |
| 2.6 | Computational and programming skills | E | AF,S |
| **3.** | **Qualifications, Education & Training** |  |  |
| 3.1 | Completed PhD in relevant subject (or equivalent research experience) | E | AF |
| 3.2 | Refereed publications in leading international journals | D | AF |
| **4.** | **Other Requirements** |  |  |
| 4.1 | Ability to motivate and engage others in research | D | AF, S |
| 4.2 | Ability to work on own initiative and as part of a team | E | AF, S |
| 4.3 | Ability to work to tight deadlines | E | AF, S |
| 4.4 | Willingness to undertake travel to industrial and project partners | E | AF,S |

**Legend**

Rating of attribute: E = essential; D = desirable

Source of evidence: AF = Application Form; S = Selection Programme (including Interview, Test, Presentation)

**JOB HAZARD IDENTIFICATION FORM**

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| **Please tick box(s) if any of the below are likely to be encountered in this role. This is in order to identify potential job related hazards and minimise associated health effects as far as possible. Please use the** [**Job Hazard Information**](http://www.port.ac.uk/departments/services/humanresources/occupationalhealthservice/jobhazardinformation/filetodownload,164407,en.doc) **document in order to do this and give details in the free text space provided.** | | | |
| 1. International travel/Fieldwork | X | 13. Substances to which COSHH regulations apply (including microorganisms, animal allergens, wood dust, chemicals, skin sensitizers and irritants, welding fume) |  |
| 1. Manual Handling (of loads/people) |  | 14. Working at height |  |
| 1. Human tissue/body fluids (e.g. Healthcare settings, First Aiders, Nursery workers, Laboratory workers) |  | 15. Working with sewage, drains, river or canal water |  |
| 1. Genetically Modified Organisms |  | 16. Confined spaces |  |
| 1. Noise > 80 DbA |  | 17. Vibrating tools |  |
| 1. Night Working   (between 2200 hrs and 0600 hrs) |  | 18. Diving |  |
| 1. Display screen equipment | X | 19. Compressed gases |  |
| 1. Repetitive tasks (e.g. pipette use etc) |  | 20. Small print/colour coding |  |
| 1. Ionising radiation/non-ionising radiation/lasers/UV radiation | | 21. Soil/bio-aerosols |  |
| 10. Asbestos and or lead | | 22. Nanomaterials | |
| 11. Driving on University business: mini- bus (over 9 seats), van, bus, forklift truck, drones only) | | 23. Workplace stressors (e.g. workload, relationships, job role etc)  X | |
| 12. Food handling | | 24. Other (please specify) | |

**Completed by Line Manager/Supervisor:**

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| **Name (block capitals)** | Dr. Jamie Foster |
| **Date** | March 2019 |
| **Extension number** | 6355 |

Managers should use this form and the information contained in it during induction of new staff to identify any training needs or requirement for referral to Occupational Health (OH).

Should any of this associated information be unavailable please contact OH (Tel: 023 9284 3187) so that appropriate advice can be given.