

Job Description & Person Specification

Last updated: 26th May 2022

**JOB DESCRIPTION**

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| Post title: | **Research Fellow - Coherent Diffraction Imaging of Quantum Materials and Devices** | | |
| Academic Unit/Service: | Physics & Astronomy | | |
| Faculty: | Physical Sciences & engineering | | |
| Career pathway: | Education, Research and Enterprise | Level: | 4 |
| \*ERE category: | Research pathway | | |
| Posts responsible to: | Project Supervisor | | |
| Posts responsible for: | - | | |
| Post base: | Non Office-based | | |

To undertake research in accordance with the specified research project under the supervision of the award holder. Utilising Bragg coherent diffraction imaging (BCDI) study phenomena in a range of multifunctional quantum materials and devices. To undertake leadership, management and engagement activities.

Job purpose

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| Key accountabilities/primary responsibilities | % Time |
| 1. To develop and carry out an area of personal research including conducting a literature review on current trends in Bragg coherent X-ray diffraction imaging.   Identify project aims and key performance indicators for each stage of the project and prepare a detailed action plan, risk assessment and detailed task list for all project stages. | 10% |
| 2. Work with Collaborators to prepare nanoscale devices for synchrotron x-ray measurements. | 20 % |
| 3. Apply for beamtime and conduct Bragg coherent diffraction imaging experiments at a range of international x-ray free electron laser (XFEL) facilities and synchrotron x-ray facilities. | 20 % |
| 4. Attend and present at regular group meetings for progress update and evaluation of key performance indicators. | 10 % |
| 5. Regularly compile documentation of all knowledge gained during the project for review by supervisory team. | 10 % |
| 6. Conduct research into potential new directions for the project research project. | 10% |
| 7. Regularly disseminate the project findings via publication in academic journals, attendance at international conferences and practical demonstrations of the project outcomes via internet media channels. | 10% |
| 8. Any other duties as allocated by the line manager following consultation with the post holder. | 10% |

Internal: Project supervisory team. External: Collaborators.

Internal and external relationships

| Special Requirements |
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| *Applications for Research Fellow positions will be considered from candidates who are working towards or nearing completion of a relevant PhD qualification. The title of Research Fellow will be applied upon successful completion of the PhD. Prior to the qualification being awarded the title of* ***Senior Research Assistant*** *will be given.* |

**PERSON SPECIFICATION**

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| Criteria | Essential | Desirable | How to be assessed |
| Qualifications, knowledge and experience | A PhD (or equivalent professional qualifications and experience) in Physics, Materials Science, Optoelectronics, Engineering or a related field.  Knowledge of coherent x-ray diffraction imaging or related techniques.  Competence in the design and fabrication of nanoscale structures or materials.  BCDI synchrotron experimentation on devices experience.  Knowledge of quantum materials and the related underlying theory.  Computer skills: Python. | Degree in materials science, engineering or a related field.  Working knowledge of iterative phase reconstruction methods and algorithms.  Competency in nanoscale crystal synthesis and characterisation using coherent x-rays.  Computer skills: PyTorch.  Affiliation or membership with professional bodies including the Institute of Physics, the Institute of Materials, Minerals & Mining, the Institution of Engineering & Technology and the Institution of Mechanical Engineers. | Interview |
| Planning and organising | Ability to manage time and responsibilities in an organised manner that can easily be communicated to team members and the external collaborators. |  | Interview |
| Management and teamwork | Experience working in large teams and a willingness to support the management of a collaborative project. |  | Interview |
| Communicating and influencing | Ability to communicate new and complex information effectively, both verbally and in writing.  Ability to present research results at group meetings, conferences and public science events.  Ability to compile research results for publication in leading peer-viewed journals. |  | Interview |
| Other skills and behaviours | Ability to work proactively with colleagues that work in other disciplines. |  | Interview |

**JOB HAZARD ANALYSIS**

**Is this an office-based post?**

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| * Yes | If this post is an office-based job with routine office hazards (eg: use of VDU), no further information needs to be supplied. Do not complete the section below. |
|  No | If this post is not office-based or has some hazards other than routine office (eg: more than use of VDU) please complete the analysis below.  Hiring managers are asked to complete this section as accurately as possible to ensure the safety of the post-holder. |

## - HR will send a full PEHQ to all applicants for this position. Please note, if full health clearance is required for a role, this will apply to all individuals, including existing members of staff.

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| **ENVIRONMENTAL EXPOSURES** | **Occasionally**  (<30% of time) | **Frequently**  (30-60% of time) | **Constantly**  (> 60% of time) |
| Outside work | N/A |  |  |
| Extremes of temperature (eg: fridge/ furnace) | N/A |  |  |
| ## Potential for exposure to body fluids | N/A |  |  |
| ## Noise (greater than 80 dba - 8 hrs twa) | N/A |  |  |
| ## Exposure to hazardous substances (eg: solvents, liquids, dust, fumes, biohazards). Specify below: | N/A |  |  |
| Frequent hand washing | N/A |  |  |
| Ionising radiation | N/A |  |  |
| **EQUIPMENT/TOOLS/MACHINES USED** | | | |
| ## Food handling | N/A |  |  |
| ## Driving university vehicles(eg: car/van/LGV/PCV) | N/A |  |  |
| ## Use of latex gloves (prohibited unless specific clinical necessity) | N/A |  |  |
| ## Vibrating tools (eg: strimmers, hammer drill, lawnmowers) | N/A |  |  |
| **PHYSICAL ABILITIES** | | | |
| Load manual handling | N/A |  |  |
| Repetitive crouching/kneeling/stooping | N/A |  |  |
| Repetitive pulling/pushing | N/A |  |  |
| Repetitive lifting | N/A |  |  |
| Standing for prolonged periods | N/A |  |  |
| Repetitive climbing (ie: steps, stools, ladders, stairs) | N/A |  |  |
| Fine motor grips (eg: pipetting) | x |  |  |
| Gross motor grips | N/A |  |  |
| Repetitive reaching below shoulder height | N/A |  |  |
| Repetitive reaching at shoulder height | N/A |  |  |
| Repetitive reaching above shoulder height | N/A |  |  |
| **PSYCHOSOCIAL ISSUES** | | | |
| Face to face contact with public | x |  |  |
| Lone working | N/A |  |  |
| ## Shift work | x |  |  |