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| Last updated: | 04/06/2024 |

**JOB DESCRIPTION**

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| Post title: | **Research Fellow** | | |
| School/Department: | Optoelectronics Research Centre | | |
| Faculty: | Faculty of Engineering and Physical Sciences (FEPS) | | |
| Career Pathway: | Education, Research and Enterprise (ERE) | Level: | 4 |
| \*ERE category: | Research pathway | | |
| Posts responsible to: | Dr Peter Horak | | |
| Posts responsible for: |  | | |
| Post base: | Office-based | | |

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| Job purpose |
| To undertake theoretical and numerical research in accordance with the specified research project “Instrument Development: A lab-scale soft X-ray microscope for biological systems” under the supervision of Dr. Peter Horak, based in the Optoelectronics Research Centre (ORC) at University of Southampton, and in collaboration with the School of Chemistry, and also with the Rosalind Franklin Institute (RFI) and the Central Laser Facility at the Rutherford Appleton Laboratories (RAL). |

| Key accountabilities/primary responsibilities | | % Time |
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|  | To undertake a range of research activities within the EPSRC funded project “Instrument Development: A lab-scale soft X-ray microscope for biological systems” including (but not limited to):   * Development and use of computer simulations of ultrahigh-power laser pulse propagation in hollow waveguides and high-harmonic generation. * Optimisation of system parameters for high X-ray generation efficiency. * Working closely with the parallel experimental system development at RFI, providing simulation support, including measurement results in the simulation, ultimately creating a “digital twin” of the instrument. | 65 % |
|  | Regularly disseminate findings by taking the lead in preparing materials for consortium meetings, refereed journals, presenting results at conferences, or exhibiting work at other appropriate events. | 15 % |
|  | Collaborate/work on original research tasks with colleagues in other institutions, particularly with researchers from ORC, RFI, and CLF. | 15 % |
|  | Carry out administrative tasks associated with specified research funding, for example risk assessment of research activities, organisation of project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting and financial control is also required. | 5 % |

| Internal and external relationships |
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| Direct internal responsibilities to academic primary line-manager (UoS/ORC, Dr. Peter Horak) as well as secondary line-manager (UoS/ORC, Dr. Bill Brocklesby).  Additional liaison responsibilities to external institutions (RFI:Prof Angus Kirkland, CLF:Dr Emma Springate).  Interact with Masters, Ph.D. students and other research fellows.  Collaborate with the research team and external partners.  May have additional reporting and liaison responsibilities to external funding bodies or sponsors. |

| Special Requirements |
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| To be available to participate in collaborative work within the aforementioned institutions and travel (primarily to RAL) as required by the specified research project goals.  To attend national and international conferences for the purpose of disseminating research results.  *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 | PhD or equivalent professional qualifications and experience in Physics, Mathematics or Electrical/Electronics Engineering.  Detailed understanding and knowledge of optics and photonics  Experience in numerical methods and simulations | PhD in Physics.  Knowledge of linear and nonlinear laser pulse propagation.  Experience of programming languages (e.g. C++, Python, Matlab). | Certificates, interview, or references |
| Planning and organising | Ability to develop high quality research activities individually, to aid with the organisation of a research team and to meet deadlines |  | Interview and references |
| Problem solving and initiative | Able to develop understanding of complex problems and apply in-depth knowledge to address them  Able to develop original techniques/methods |  | Interview and references |
| Management and teamwork | Able to supervise work of junior research staff, delegating effectively  Work effectively in a team, understanding the strengths and weaknesses of others to help teamwork development |  | Interview and references |
| Communicating and influencing | Communicate new and complex information effectively, both verbally and in writing, engaging the interest and enthusiasm of the target audience  Able to present research results at group meetings and conferences  Able to write up research results for publication in leading peer-viewed journals  Work proactively with colleagues throughout the ORC, Chemistry ,and externally with collaborators from RFI and CLF, contributing specialist knowledge to achieve outcomes |  | Application and interview |
| Other skills and behaviours | Understanding of relevant Health & Safety issues  Motivated and enthusiastic work ethic  Positive attitude to colleagues and students |  | Application and interview |
| Special requirements | Able to attend national and international conferences to present research results |  | Application and 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) | N/A |  |  |
| 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 | N/A |  |  |
| Lone working | N/A |  |  |
| ## Shift work/night work/on call duties | N/A |  |  |