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| Last updated: | 06/07/2018 |

**JOB DESCRIPTION**

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| Post title: | **Research Fellow** | | |
| School: | Zepler Institute for Photonics and Nanoelectronics | | |
| Faculty: | Faculty of Engineering and Physical Sciences | | |
| Career Pathway: | Education, Research and Enterprise (ERE) | Level: | 4 |
| \*ERE category: | Research pathway | | |
| Posts responsible to: | Professorial Fellow | | |
| Posts responsible for: | None | | |
| Post base: | Office-based | | |

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| Job purpose |
| To undertake modelling of loss mechanisms in microstructured optical fibres aimed at developing mitigating strategies that would ensure a widespread use of the technology in many areas of science and technology, in accordance with the specified research project. |

| Key accountabilities/primary responsibilities | | % Time |
| --- | --- | --- |
|  | Develop a theoretical framework and numerical tools to understand loss mechanisms in microstructured hollow-core optical fibers. In particular seek to understand how the optical loss is affected by choice of fiber coatings. Develop experimental procedures to help validate the theoretical models and ultimately formulate effective strategies to mitigate sources of loss through bespoke fiber designs, improved fiber packaging, improved fabrication practices or otherwise. | 40% |
|  | Develop and validate theoretical models and numerical simulation tools to study the effect of hostile environments on the performance of state of the art hollow-core optical fibers. Formulate strategies to effectively mitigate performance impairments that might result from operating fibers in such hostile environments. | 40% |
|  | Interact with experimentalists to identify requirements and discuss characterization methods | 5% |
|  | Contribute to the improvement of available simulation codes and/or to the generation of purposely build numerical tools. | 5% |
|  | Regularly disseminate findings by taking the lead in preparing publication materials for refereed journals, presenting results at conferences, or exhibiting work at other appropriate events. | 5% |
|  | Report periodically on progress during internal group meetings. | 3% |
|  | Contribute to the writing of bids for research funding, generation and protection of intellectual property. | 1 % |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 1 % |

| Internal and external relationships |
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| Direct responsibility to holder of research award or academic supervisor.   * Work closely with supervisors and collaborate effectively with other members of the group * Supervise students if required * Work with the technical IT support staff to ensure efficient running of the simulation facilities |

| Special Requirements |
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| May be required to travel nationally and internationally.  *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 the field of Engineering, Physics, Maths, Material Science, etc  Knowledge of numerical modelling techniques.  Track record of excellence in research. | Detailed understanding and knowledge of the theory of elasticity and viscoelasticity.  Knowledge of optical waveguide theory  Knowledge of optical fibre fabrication process, polymer coatings and fiber characterization procedures.  Experience in the use of COMSOL Multyphysics, MATLAB or other commercial modeling tools.  Experience in the use of parallel computing  Detailed knowledge of numerical techniques applied to fibre optics is highly desirable.  Knowledge of optical fibre properties is highly desirable.  Previous knowledge of microstructured fibre theory and properties is desirable.  Previous knowledge of mechanical behaviour of polymer materials is desirable. | For all criteria, evidence to be provided at interview and through references and publication record. |
| Planning and organising | Able to organise own research activities to deadline and quality standards |  |  |
| 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 |  |  |
| Management and teamwork | Able to work as part of a team and provide leadership for PhD students.  Work effectively in a team, understanding the strengths and weaknesses of others to help teamwork development |  |  |
| 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 in other work areas/institutions, contributing specialist knowledge to achieve outcomes |  |  |
| Other skills and behaviours | Motivated and enthusiastic work ethic  Understanding of relevant Health & Safety issues  Positive attitude to colleagues and students | Evaluates suggestions objectively, accepts constructive criticism, and seeks guidance when needed |  |
| Special requirements | Able to attend national and international conferences to present research results |  |  |

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