February 2023

**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: | Principal Investigator | | |
| Posts responsible for: | None | | |
| Post base: | Office-based/Non Office-based (see job hazard analysis) | | |

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| Job purpose |
| To undertake research on an EPSRC funded project targeting the integration of electronic and silicon photonic components. |

| Key accountabilities/primary responsibilities | | % Time |
| --- | --- | --- |
|  | To develop and carry out research in the area of electronic IC design, silicon photonics design, integration and characterisation. This will include design and modelling using Cadence, ADS, Matlab, Lumerical, and Silvaco. Responsibilities also include integration (flip-chip and wire bonding), PCB assembly and laboratory experimentation, literature review, critical evaluation and interpretation. | 65 % |
|  | Collaborate/work on research tasks with industrial partners. Regular meetings/design reviews. | 20% |
| 3. | To carry out administrative tasks associated with the project, for example, risk assessment of research activities, participation in project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting. |
|  | Develop and engage in research methodologies that add to the knowledge/understanding of the subject area. |
|  | Identify sources of research funding and secure funds through bids and growing reputation. |
|  | Collaborate on and develop original research with colleagues in other institutions. | 10% |
|  | To oversee and implement procedures required to ensure accurate and timely formal reporting and financial control. |
|  | Undertake liaison with external organisations including equipment manufacturers, associated academic facilities and commercial users. |
|  | Provide expert advice in own subject area to other staff and students. |
|  | Carry out occasional student supervision, demonstrating or lecturing duties within own area of expertise. |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 5 % |

| Internal and external relationships |
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| Direct responsibility to the holders of the research award. Work in collaboration with teams at the industry partner. |

| Special Requirements |
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| To be available to participate in fieldwork as required by the specified research project.  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 Electronics  Experience in analogue and RF IC design and PCB design.  Experience in the characterisation of high speed electronic devices. | Understanding of high speed SERDES and clock generator.  An understanding of integrated photonic technology and the integration of CMOS electronics.  An understanding of integration of photonics with electronic devices | Application and interview |
| Planning and organising | Excellent organisational and time management skills |  | References and interview |
| 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 |  | References and interview |
| Management and teamwork | Able to contribute to Academic Unit management and administrative processes  Work effectively in a team, understanding the strengths and weaknesses of others to help teamwork development |  | References and interview |
| 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 ORC/ECS and other work areas/institutions, contributing specialist knowledge to achieve outcomes |  | Application and interview |
| Other skills and behaviours | Understanding of relevant Health & Safety issues  Proactive in promoting a working environment that is inclusive and engaging; recognising the value diversity brings. |  |  |
| 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 |  |  |  |