

Job Description

Post title: Optical Engineer

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School / Department:	Optoelectronics Research Centre
Faculty / Directorate:	FEPS
Job Family:	Technical and Experimental (TAE)
Grade:	Level 4
ERE Pathway (if applicable):	Not applicable
Post reporting to:	Prof. Natalie Wheeler
Post line report(s):	None
Post base location:	Campus : Highfield, ORC

Job purpose: The role supports research and external collaborative programmes through the development, implementation and continuous improvement of advanced hollow-core fibre characterisation capabilities.

Design and deploy novel measurement techniques, develop automated data-acquisition and analysis software, establish and maintain measurement uncertainty models, and provide specialist expertise on the interpretation, limitations and optimisation of optical characterisation methods.

Support laboratory-based research activities, technology qualification programmes and external collaborations through the generation, analysis and communication of high-quality technical data.

Key accountabilities and indicative time allocation:

- | 1. | | 15% |
|---|--|------------|
| <p>Apply a full understanding of a technical or experimental field to manage and deliver a range of complex work activities and/or oversee a technical or specialist support function.</p> <p>Design, develop, validate, and deploy new, advanced optical fibre characterisation techniques and measurement capabilities, including reflectometry, loss measurement, environmental testing, and other advanced optical metrology systems.</p> | | |
| 2. | | 15% |
| <p>Manage and deliver short and medium-term projects, work assignments and process changes and/or contribute to longer-term or more significant projects and change programmes as part of a wider project team.</p> <p>Deliver technical work packages associated with the development of new characterisation capabilities, automated measurement platforms, reliability testing programmes and advanced fibre</p> | | |

performance studies. Plan, manage, and coordinate allocation of lab and measurement resources to ensure effective use of laboratory resources and timely completion of technical work.

3.	20%	Manage and deliver a defined technical or specialist support function. Define, develop, review and refine working practices to meet service and/or quality standards and objectives. Develop and maintain lab data acquisition software tools, instrument-control systems, automated analysis workflows, and measurement methodologies. Establish and maintain error models, uncertainty budgets, and calibration methodologies supporting advanced optical metrology across the group. Evaluate and adapt measurement techniques according to fibre design, optical performance requirements, deployment environments, and project objectives, selecting appropriate characterisation methodologies to maximise measurement quality and technical insight.
4.	10%	Provide specialist technical advice, guidance and recommendations on broadly defined, complex issues, including the design, development and application of new and existing specialist techniques, equipment and/or procedures. Act as the group's specialist advisor on optical fibre measurement science, characterisation physics, and uncertainty analysis. Lead the design and implementation of novel measurement systems and provide expert guidance regarding measurement limitations, error budgets, calibration strategies, reliability assessments and interpretation of technical results. Prepare and present technical findings and recommendations to researchers, industrial collaborators, and external customers.
5.	10%	Analyse, evaluate and interpret complex test results and other specialised information, data or concepts. Identify gaps in understanding, and methods of addressing these. Identify themes, consider implications and propose or develop solutions as appropriate. Analyse and interpret complex datasets generated from experimental measurements, automated data-acquisition systems and reliability-testing programmes. Develop and own error models, maintain uncertainty budgets, identify measurement limitations and recommend improvements to methodologies, instrumentation and data-analysis approaches.
6.	5%	Proactively work with and influence peers and other colleagues to help achieve objectives and coordinate technical activities across different parts of the University. Collaborate with researchers, industrial partners and multidisciplinary project teams to define measurement requirements, develop characterisation strategies and deliver technical outputs supporting research and externally funded programmes. Provide specialist training and guidance in advanced optical measurements, automated data acquisition, software tools, uncertainty analysis and reliability-testing methodologies.
7.	10%	Monitor and maintain appropriate records and reports to meet internal and external requirements (e.g., audit and compliance reports, service level agreements, health and safety records). Maintain detailed technical records relating to fibre samples, characterisation measurements, simulation outputs, laboratory activities, and health and safety requirements.
8.	5%	Line manage or supervise junior colleagues performing a range of complex, mostly standardised, technical or experimental activities. Plan and prioritise short and medium-term work, monitor progress, conduct appraisals, formulate development plans and provide advice, guidance and coaching as required. Conduct recruitment, induction and probation activities as required.
9.	5%	

Plan and prioritise short and medium-term work activities. Interpret requirements, co-ordinate with related activities and services, determine sequence of work and adapt approach if required, within general requirements and overall objectives.

Coordinate competing measurement, microscopy, modelling, and database activities across multiple projects, ensuring effective use of laboratory resources and timely completion of technical work.

10.

5%

Any other duties as allocated by the line manager following consultation with the post holder.

Internal and external relationships:

Academic and technical staff within the Optoelectronics Research Centre.

Researchers, students and collaborators involved in hollow-core fibre research, manufacturing and characterisation.

University technical facilities and specialist support services.

External Industry and academic collaborators.

Suppliers and manufacturers of specialist laboratory, optical and microscopy equipment.

Special requirements:

Regular work within optical fibre, and characterisation laboratories. The post holder will be expected to complete and maintain relevant laboratory, laser safety, microscopy, chemical safety, and equipment-specific training as required.

Person Specification – Skills and Competencies

All essential and desirable criteria outlined in this Person Specification will be assessed through a combination of recruitment application and CV, and where applicable numerical or written assessment.

Knowledge, Experience and Qualifications

Essential

- Substantial and authoritative practical knowledge and experience in the required operational discipline, supported by general theoretical understanding.
- The required level of knowledge and understanding will normally have been gained through some or all of the following:
 - Considerable work experience
 - Vocational training
 - Formal qualification(s) equivalent to Level 5 or 6 of the [Regulated Qualifications Framework](#) e.g. foundation degree or degree with honours, or Level 5 or 6 award, certificate, diploma, NVQ.
- Knowledge, experience and competence may also be evidenced through professional registration:
 - Professional registration at the Registered Scientist (RSci) level will typically indicate partial competence at TAE Level 4.
 - Professional registration at the Incorporated Engineer (IEng) level will typically indicate full competence at TAE Level 4.
- Experience developing automated measurement, control or data-acquisition software using Python, LabVIEW or similar environments.
- Experience designing or implementing complex experimental measurement systems.
- Experience analysing complex optical, photonic or scientific datasets.
- Experience developing or applying measurement uncertainty models and error-budget analyses.
- Experience communicating technical findings and recommendations to researchers, customers or external stakeholders.
- Strong understanding of optical measurement principles and experimental physics.

Desirable

- Experience with hollow-core optical fibres.
- Experience with OTDR, OFDR, or advanced fibre-optic reflectometry techniques.
- Experience with fibre-optic component qualification and reliability testing.
- Experience with accelerated life testing, highly accelerated stress screening (HASS) or related methodologies.
- Familiarity with Telcordia (Bellcore) qualification standards.
- Experience with fibre splicing and advanced fibre-handling techniques.
- Experience developing custom instrumentation or laboratory automation systems.
- Experience working within industrially funded R&D programmes.

Teamwork and Communication

Essential

- Delegates and/or collaborates effectively, understanding the strengths and weaknesses of colleagues.
- Works proactively with colleagues and other stakeholders, within and beyond the University, to achieve outcomes.
- Communicates effectively to develop understanding and achieve cooperation.

- Provides clear specialist advice, guidance and recommendations on complex issues.

Desirable

- Experience conveying complex technical information to a diverse group of customers and stakeholders
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Planning, Organisation and Resource Management

Essential

- Plans and progresses a range of work activities within broad professional guidelines and established University policies and procedures.
 - Formulates development plans to meet current skill requirements.
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Problem Solving and Initiative

Essential

- Develops detailed understanding of long-standing and/or complex problems and applies professional knowledge and experience to resolve them.
- Demonstrates an awareness of principles and trends in a professional or specialist field and awareness of how this affects activities in the University.

Desirable

- Strong experience troubleshooting complex opto-electronic and photonics systems and experiments
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Job Hazard Assessment

A full health clearance is required for this role where any hazards marked “^”, using the agreed Occupational Health referral template [available from here](#). Where a full health clearance is required, this will apply to all role holders, including existing members of staff.

Physical Environment

Working outside ^	Not applicable
Exposure to noise levels >80dbA ^	Occasionally <30% Time
Working with dust or fumes ^	Occasionally <30% Time
Working with skin irritants ^	Occasionally <30% Time
Working with chemicals (industrial or cleaning) ^	Occasionally <30% Time
Working in a confined space ^	Not applicable
Working at height ^	Occasionally <30% Time
Working with sewage ^	Not applicable
Contact with cytotoxins ^	Not applicable
Exposure Prone Procedure (EPP) work ^	Not applicable
Contact with clinical specimens or pathology work ^	Not applicable
Direct patient care or patient contact	Not applicable
Exposure to temperature extremes	Occasionally <30% Time
Frequent hand washing	Not applicable
Ionising radiation	Not applicable

Psychological and Social Environment

Working shifts ^	Not applicable
Working nights ^	Not applicable
Lone working	Occasionally <30% Time
Working with children	Not applicable
Exposure to persons with challenging behaviour	Not applicable
Working with larger groups	Occasionally <30% Time

Equipment, Tools and Machines

Working with vibrating machinery or tools ^	Occasionally <30% Time
Driving duties e.g. LGV, PCVs, forklift trucks ^	Not applicable
Food handling	Not applicable
Contact with latex	Not applicable

Physical Abilities

Prolonged physical movements or actions e.g. walking ^	Occasionally <30% Time
Prolonged Standing or Sitting ^	Occasionally <30% Time
Moving or handling heavy loads ^	Occasionally <30% Time
Repetitive pulling or pushing ^	Occasionally <30% Time

Repetitive climbing (steps, stools, ladders, stairs) ^	Not applicable
Repetitive crouching, kneeling or stooping	Occasionally <30% Time
Repetitive lifting	Occasionally <30% Time
Fine motor grips (e.g. pipetting)	Occasionally <30% Time
Repetitive reaching below shoulder height	Occasionally <30% Time
Repetitive reaching at shoulder height	Occasionally <30% Time
Repetitive reaching above shoulder height	Occasionally <30% Time
