

# Job Description

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Wrexham University



<b>Faculty/Department</b>	Faculty of Arts, Computing and Engineering
<b>Section</b>	Engineering
<b>Job Title</b>	Research Assistant in Engineering
<b>Reports to</b>	Professor of Composites Engineering
<b>Grade</b>	Research Assistant

## Context

Wrexham University is working in a consortium lead by Southampton University titled “Novel flat optical fibre sensors for application in process control, evaluation and health monitoring of high value composite assets”. The vision is radical redesign of optical fibre (making its external profile flat and internal profile microstructured) will enable a new in-situ measurement paradigm that elicits through-thickness strains in laminated composite structures during manufacture and service. The novel sensor technology will inform composite design and manufacturing strategies to facilitate Net-Zero sustainability goals by reducing scrappage and extending operational lifetime. The fibre optic sensors being developed at Southampton University using their impressive facilities for manufacturing bespoke optical fibres. These fibres have cross sections which enhance the effect of strain which is measured using optical sensing techniques. Since they are not round the fibres can be placed in laminates and the direction of the strains is defined. This work forms the first part of the project- to develop an in fibre strain gauge rosette.. The other partners will then use these sensors in order to establish control of residual strains during a range of manufacturing processes. Wrexham University manufactures very large (1-2m diameter) complex mirrors through its spin out company Glyndwr Innovations Limited. These are manufactured using low expansion glass. They are often lightweighted as the glass blank is very heavy. Preliminary research has shown that it is possible to manufacture mirrors from carbon fibre/epoxy prepreg. These suffer from comparatively large distortion on curing. Finite Element analysis has given some guidance on the best layouts to reduce this. Separately within the team there is experience of using microwave heating to cure laminates. The programme at Wrexham University builds on this background and involves the following steps:-

Design of a tool in which to cure the composite mirrors. This will need to be modelled in ANSYS HFSS.

Design of hardware and software to control the microwave field using multiple sources.

Manufacture of demonstrator composite mirrors from carbon/epoxy prepreg through controlled microwave heating. The dimensions of these will be measured at Glyndwr Innovations Ltd.

The successful candidate will thus need a broad range of skills based around microwave systems, electronics and software design. We are looking for solutions where the decision making will be through AI.

## Principal Accountabilities

The research assistant will support the project by undertaking data collection, contribute to and conduct research, including gather, prepare and analyse data, generate original ideas and present results liaising and networking with a wide range of people at different levels of authority. They will network in the academic and wider community to raise the profile of the research and increase the potential impact of the findings. The post holder will be a representative of the University and whilst in the field, they will need to make decisions, supported by a framework of actions and in collaboration with the Principal Investigator, they will report progress regarding the day to day conduct of the research to the research lead.

## Key Tasks

The primary responsibilities of this post will be:

- Assist in all aspects of the research activity within the project working independently and in collaboration with other team members and relevant internal partners.
- Pro-Actively contribute to and conduct research, including gather, prepare and analyse data, generate original ideas, and present results.
- Attend relevant research meetings and contribute to the outputs, providing feedback on progress as required.
- Assist and contribute to the smooth progress of the project. Keep all involved in the project informed of progress, apply own initiative to decision-making and seek guidance when required.
- Write concise timely reports for review by the Principal Investigator when appropriate and assist with keeping the research team updated on the progress of the research.
- Interact positively and professionally with partners, assist in the development of new partnerships, and maintain good relationships with existing ones.
- Maintain confidential and accurate record keeping and data management in line with ethical considerations.
- Where appropriate, to support the delivery of education courses and workshops related to the research project.
- Participate in / help to organise external networking events, exhibitions etc.as necessary to promote the project, engage with externals and gain feedback.
- To be an active member of the University's research community and have a role to play in developing and promoting a positive and inclusive research culture.
- It is anticipated the person may not be familiar with a particular methodology of the research but will learn this whilst in post with the guidance of the Principal Investigator.

## Special Features

There may be the requirement to travel to meetings and events and to collect data when required.

The ability to communicate in the medium of Welsh is desirable.

## General Duties

You will ensure that appropriate management systems and procedures are in place to meet your health and safety duties and responsibilities contained within the University's health and safety policy. In particular, you will ensure that appropriate risk assessments are carried out in respect of significant hazards and that safety inspections are undertaken on at least an annual cycle in each workplace under your control.

It is the responsibility of employees to apply the University's Equal Opportunities Policy in their own area of responsibility and in their general conduct.

All staff have a responsibility for promoting high levels of customer care within their own areas of responsibility.

Staff must be aware of the University's commitment to Sustainability.

All staff must promote healthy behaviour and positive mental health and wellbeing.

Post holders are expected to co-operate with the Professional Development Review (PDR) process, engaging in the setting of objectives to assist in the monitoring of performance and the development of the individual.

You will assess the training and development needs of each member of staff under your control to ensure they are adequately supported in relation to their work responsibilities.

Such other relevant duties commensurate with the grade of the post as may be assigned by the Manager in agreement with the post holder. Such agreement should not be unreasonably withheld.

The key responsibilities contained in this job description are indicative not exhaustive. Duties and responsibilities may be altered in discussion with the post holder.

All post-holders within the Directorate are expected to be able to provide support across all areas, beyond their immediate team, as requested by the Director and commensurate with their skills, knowledge, and experience.

The University is a signatory to the Researcher Development Concordat and Research Integrity Concordat. The post holder is expected to adhere and promote the requirements of this provision.

## Review

This is a description of the job at the time of issue. It is the University's practice periodically to review and update job descriptions to ensure that they accurately reflect the current nature of the

job and requirements of the University and to incorporate reasonable changes where required, in consultation with the job holder.

# Person Specification

**Job Title:** Research Assistant in Engineering

In order to be shortlisted you must demonstrate that you meet all the essential criteria and as many of the desirable criteria as possible. Where we have a large number of applications that meet all of the essential criteria, we will then use the desirable criteria to produce the shortlist.

Selection Criteria					
Attributes		Item	Relevant Criteria	Identification Method	Rank
1	Skills & Abilities	1.1	Excellent IT skills – management of spread sheets, Gantt charts and ability to use Microsoft Office efficiently.	A,I	E
		1.2	Excellent verbal and written communications skills.	A,I	E
		1.3	Excellent data management and report writing skills.	A,I	E
		1.4	High level of organisational skills and ability to work on own initiative and prioritise own work to ensure an effective service.	A,I	E
		1.5	Ability to work effectively in a team and collaborate across the University.	A,I	E
2	General & Specialist Knowledge	2.1	Evidence of ability to conduct research in line with the objectives of the project.	A,I	E
		2.2	Evidence of the ability to actively engage in and contribute to writing and publishing research papers.	A,I,	E
3	Education & Training	3.1	Degree in relevant subject.	A,I	E
4	Relevant Experience	4.1	Knowledge and experience of research activity and report writing.	A,I	E
		4.2	Experience of all aspects of general administration.	A,I	E

5	Special Requirements	5.1	Ability and willingness to travel to meetings and events and to collect data where required.	A,I	E
		5.2	Ability to communicate in Welsh.	A,I	D
<b>Date of Revision</b>					

<b>Key</b>	<b>Identification Method</b>	<b>A</b>	Application Form
		<b>I</b>	Interview
		<b>T</b>	Test
		<b>C</b>	Copy of Certificates
		<b>P</b>	Presentation
		<b>G</b>	Group Assessment
	<b>Rank</b>	<b>E</b>	Essential
		<b>D</b>	Desirable

