

## Research Associate – Optical Measurement of Internal Combustion Engine Fluid Flow and Combustion

Job Ref: REQ17812

**As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.**

### Project Description

The research group relevant to the advertised post consists of researchers involved with a significant number of current government and industrially funded advanced internal combustion (IC) engine projects. Loughborough University has outstanding research facilities for optical engineering, thermofluids and IC engine research including a modern fully equipped engine powertrain laboratory comprising 8 test cells.

This is an exciting opportunity for researchers to join a strong group investigating and developing technologies to improve IC engine performance, fuel economy, emissions and sustainability. The work will be with major international engine/vehicle manufacturers and suppliers and is supported by the national Advanced Propulsion Centre UK [www.apcuk.co.uk](http://www.apcuk.co.uk).

The Research Associates will be primarily based in the Wolfson School of Mechanical and Manufacturing Engineering, with some laboratory work conducted elsewhere at the University and at collaborating organisations.

The work entails, primarily, the following activities under the direction and supervision of Professor Graham Hargrave, Professor Colin Garner, Dr, Edward Long, Dr Andrew Williams and Dr Huayong Zhao, or their nominee.

### Job Description

**Job Grade:** Research and Specialist Grade 6

#### Job Purpose

The Research Associates will be responsible for conducting research into IC engine fluid flow, and combustion.

#### Job Duties

##### Research

- To conduct scientific and technological research into optical measurements in IC engine systems as part of research projects at Loughborough.
- To be responsible for research involving the measurement of engine fluid flow, and combustion, and the design, procurement of parts and instrumentation, building, testing of specialised rigs.
- To conduct analysis of data and, where appropriate, modelling
- To assist in other related engineering research projects as required.
- To carry out literature reviews, to write up technical reports and technical papers for publication of the results obtained and the generation of research posters and other publicity media.
- To make technical presentations at project meetings
- To plan, manage and conduct the work to agreed dead-lines.
- To set and monitor budgets with respect to expenditure on equipment, consumables and travel.
- To assist in guiding and training postgraduate research students.
- To assist in managing research projects.

- To assist in developing new lines of research and the writing of research proposals
- To keep close contact with research sponsors and make technical presentations.
- To maintain confidentiality where appropriate and to ensure that intellectual property (IP) agreements are met.
- To identify and report new opportunities for IP generation.
- Where necessary, to spend short periods of time travelling in the UK and overseas.
- Travel to equipment suppliers and other organisations on an ad-hoc basis.

### **Teaching**

- Teaching is not the primary purpose of this post and teaching load will be small relative to the typical load of a member of academic staff in the School, but the Research Associates will be expected to contribute to taught programmes and student projects, at any level, if appropriate and if requested to do so.

### **Other Related Activities and Functions**

- To engage in training programmes in the University (e.g. through Professional Development) and elsewhere as required.
- To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

### **Points To Note**

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

### **Special Conditions**

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

### **Organisational Responsibility**

Reports to the Professor of Optical Diagnostics.

## Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

- 1 – Application
- 2 – Test/Assessment Centre/Presentation
- 3 – Interview

### Essential Criteria

Area	Criteria	Stage
Experience	The conducting of original research that can be, or has been published in high quality journals	1, 3
	Use of advanced measurement techniques	1, 3
	Project planning	1, 3
	Analysis of quantitative experimental data	1, 3
	Competent IT/ Internet user	1, 3
Skills and abilities	Demonstration of excellent technical ability	1, 2, 3
	Excellent inter-personal and communication skills - both written and oral	3
	Excellent team-working skills	3
	Excellent research paper or report writing skills	1, 3
	Highly-motivated with the ability to set and meet deadlines appropriate to the progress of the project	1, 3
Training	A willingness to undertake further training as appropriate and to adopt new procedures as and when required	3
Qualifications	A PhD (or near to completion) in mechanical/electrical engineering, or other relevant subject.	1
Other	Willingness to travel	3
	Commitment to observing the University's Equal Opportunities policy at all times	3

### Desirable Criteria

Area	Criteria	Stage
Experience	Equipment purchasing/budgeting	1, 3
	Project management/leadership experience	1, 3
	Computer aided design techniques for mechanical systems	1, 3
	Experience with modelling techniques and experimental instrumentation	1, 3
Skills and abilities	Knowledge of engine technology and systems	1, 3
	Track record in originating and developing new ideas	1, 2, 3
	Relevant industrial experience	1, 3
	Interest in automotive and IC engine product development	1, 3
	Interest in fluid flow and combustion measurement techniques	1, 3

Qualifications	Relevant postgraduate research qualifications or industrial experience in any one of the following areas: 1. optical measurement techniques; 2. fluid flow or combustion; 3. chemical processes or process plant; 4. IC engines or gas turbines; 5. relevant subjects in physics, materials science or chemical engineering	3
Other	Licensed for driving in the UK	3

## Conditions of Service

The position is full-time and fixed term until 31 October 2018. Salary will be on research and Specialist Grade 6 (£29,301 - £38,183), per annum, at a starting salary to be confirmed on offer of appointment. Subject to annual pay award.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Academic and Related staff/Operational and Administrative staff, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at <http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html>.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>

In addition, the University is supportive, wherever possible, of flexible working arrangements. We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>

## Informal Enquiries

Informal enquiries are welcomed and should be directed to Professor Graham Hargrave, Professor of Optical Diagnostics, Wolfson School of Mechanical and Manufacturing Engineering, Tel: +44 (0)1509 227526, [G.K.Hargrave@Lboro.ac.uk](mailto:G.K.Hargrave@Lboro.ac.uk).

## Applications

The closing date for receipt of applications is **27<sup>th</sup> September 2017**.