

Research Associate* - Laser Ultrasonic Phased Arrays

Department	Electronic and Electrical Engineering (www.strath.ac.uk/engineering/electroniclectricalengineering/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Research	Reference No	292263
Reports To	The Head of Department through Dr T Stratoudaki	Grade:	7
Salary Range:	£32817 - £34,804	Contract Type:	Fixed Term (24 months)
FTE	1	Closing Date	08/05/2020

Job Advert

Applications are invited for a Research Associate to join the Electronic and Electrical Engineering Department of the University of Strathclyde. You will be involved in an EPSRC funded project on the development of remote ultrasonic imaging based on laser ultrasonic phased arrays. The application of phased array ultrasonics has had a profound impact on science and medicine because of the superior ultrasonic imaging they offer. Phased array ultrasonics have also seen a dramatic increase in their use for non-destructive testing, which is the focus of the research of this post.

The laser ultrasonic phased arrays are remote, couplant-free ultrasonic arrays, made of light and are synthesised in post-processing, using ultrasonic imaging algorithms. They will be applied in extreme environments, for in-line process monitoring (for example additive manufacturing) or in-service inspection of safety critical applications (for example nuclear fusion), where conventional arrays cannot be applied. This project will involve a high degree of teamwork and interdisciplinary research. You will have the chance to work in a project that will contribute to reducing usage of natural resources and making safer management of critical components. In alignment with these goals, we value diversity in research as well as within the research team and welcome applications from a diverse range of backgrounds to collaborate in a supportive and inclusive environment.

The department endorse the principles of Athena SWAN, for which we hold the bronze award, and we are committed from all levels in our faculty in promoting gender equality. Your career development will be supported within this project, which presents excellent opportunities for networking with academic and industrial partners, as well as funding for participating in events and opportunities for training for research, teaching, leadership, management. You will have access to Strathclyde's excellent and extensive researcher development program and mentoring scheme.

You will be expected to: design and implement laboratory experiments; contribute to research publications and conference presentations; support research students. You will be responsible for the safe maintenance of laser facilities and participate in the research group's activities. You will have the ability to work both independently and as part of a multi-disciplinary and/or cross-disciplinary team, collaborating effectively with both academic and industrial partners. You will be confident in communicating and presenting complex information in an accessible way to a range of audiences.

To be considered for the role you will be educated to PhD level in engineering, physics or material science, or have significant, relevant experience in addition to a relevant Degree. You will have sufficient breadth or depth of knowledge n experimental research in ultrasonic arrays. You will have a developing ability to conduct individual research work, to disseminate results and to prepare research proposals. With the ability to plan and organise your own workload effectively, you will be able to work both independently and within a team environment. You will have excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

*Whilst a Research Associate is ideally sought for this position, applications from candidates who are close to PhD completion or whose award is pending are welcome. In such circumstances, the appointment will be made at Research Assistant level (RS06 salary scale: £28,331 - £31,866) and duties will be adjusted to reflect the grade of the post. This will continue until the PhD award is confirmed, at which point the duties and grade will be revised accordingly.

Job Description

Brief Outline of Job:

You will undertake a specific research project into developing a laser based, remote ultrasonic imaging system for non-destructive evaluation of materials such as metals and process monitoring, such as welding and additive manufacturing. The work will involve: design and implementation of a laser based setup; development of a method for fast data acquisition; development of signal processing and novel ultrasonic imaging algorithms for laser phased arrays; implementation of the technique for process monitoring, on line. Automated delivery of the system, through the use of robots, will be done in mature stages of the project. The main challenges are expected in making data acquisition fast, in order to demonstrate the potential of the system for practical applications and working in the extreme environments (high heat) of the manufacturing process.

Main Activities/Responsibilities:

1.	Experimental design, development and implementation and management of laser facilities.
2.	Development and optimisation of data acquisition method for fast data acquisition.
3.	Development of signal processing and optimisation of imaging algorithms to laser ultrasonics.
4.	Implement the technique for on line process monitoring.
5.	Develop new techniques in laser ultrasonics for ultrasonic imaging using phased arrays, applying appropriate approaches to identify areas for research and develop new research methods, extending the research portfolio.
6.	Write up research work for publication, individually or in collaboration with colleagues, and disseminate results as appropriate to the discipline by, for example, peer reviewed journal publications and presentation at conferences.
7.	Contribute to identifying and securing research funding, including drafting grant proposals and planning for future proposals.
8.	Support postgraduate research students and participate in Departmental teaching and project supervision.
9.	Liaise with stakeholders at University of Strathclyde and academic and industrial partners
10.	Engage in continuous professional development.

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E1 PhD in Engineering or Science discipline cogent to the research area, i.e. Engineering, Physics, Material Science; or equivalent experience.

E2 Good Honours Degree in Engineering or Science discipline cogent to the research area, i.e. Engineering, Physics; or equivalent experience.

D1 Membership of relevant Chartered/professional bodies (including Higher Education Academy).

Experience

E3 A strong background in experimental research in ultrasonic arrays (e.g. FMC and TFM) or applied optics.

E4 Experience in signal processing.

E5 Experience in data analysis (Matlab or equivalent).

D2 Experience working with lasers and optics.

D3 Experience with data acquisition hardware and software.

D4 Experience in developing imaging algorithms for ultrasonics.

Job Related Skills and Achievements

E6 Developing ability to conduct individual research work, to disseminate results and to prepare research proposals.

E7 Excellent verbal and communication skills.

E8 Proven track record of high-quality publications.

E9 The ability to manage complex and dynamic workloads and schedules.

D5 Proficiency in programming languages (e.g. MATLAB, C/C++).

Personal Attributes

E10 Self-motivated with the ability to plan and organise your own workload effectively.

E11 Ability to work as part of an interdisciplinary team.

E12 Ability to interact with a range of stakeholders.

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted before interview without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (<http://www.strath.ac.uk/hr/workforus>).

Informal enquiries about the post can be directed to Dr Theodosia Stratoudaki, Lecturer (t.stratoudaki@strath.ac.uk).

Conditions of Employment

Conditions of employment relating to the Research staff category can be found at: [Conditions of Employment](#).

Rewards and Benefits

Our staff have access to a wide range of outstanding benefits that include financial rewards, family friendly and wellbeing benefits and career development opportunities, details of which can be found [here](#).

Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from [Payroll and Pensions](#).

Interviews

Formal interviews for this post will be confirmed.

Equality and Diversity

We value diversity and welcome applications from all sections of the community.

The University currently holds a Bronze Athena SWAN award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.

University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. [Our Values](#) have been derived from how we act and how we expect to be treated as part of Strathclyde.

