

Research Associate in ultrasonic non-destructive testing

1 JOB DESCRIPTION

Faculty / School or Division: Faculty of Science and Engineering

Faculty/School or Division Address: School of Electrical, Electronic and Mechanical Engineering,
Queen's Building, University Walk, Bristol, BS8 1TR

Job Family:	Research and Teaching		
Grade/Pathway:	I – Pathway 2	Salary range:	£40,704 - £45,641 (Grade I)
Hours of work:	35 hours per week	Contract type:	Open ended with fixed funding until 14 months
Work pattern:	Full time	Vacancy Reference Number: ACAD108735	

1.1 Main Job Purpose

The Research Associate will contribute to the project “3D ultrasonic imaging for characterisation of critical microstructural locations in polycrystalline materials”. The project is part of the Core research programme, funded by the UK Research Centre in Non-destructive Evaluation (RCNDE), which is a collaboration between industry and academia that coordinates research on NDE techniques. The project has been selected for funding by industrial partners due to its academic quality and industrial relevance and aims to develop a material characterisation framework based on using ultrasonic array measurements to create a volumetric map of local microstructural properties. If successful, the developed method will represent a step-change in quantitative material microstructural imaging and will allow previously out of reach phenomena to be studied. Therefore, the potential reward is the unique imaging and characterisation tool at the frontier of non-destructive testing and material science, with significant benefits and applications in many industrial sectors.

One of the significant challenges and risks associated with the project arises from its cross-disciplinary nature, spanning the fields of ultrasonic non-destructive testing (UNDT) and materials science. The post-doctoral Research Associate position was budgeted to undertake critical experimental testing activities during the final year of the project, which are essential to its overall success.

1.2 Main Statement of Responsibilities

Research Responsibilities

- This role will focus on the optimisation and validation of ultrasonic microstructural characterisation methods.

- Perform experimental ultrasonic array measurements and material testing using a range of conventional material characterisation techniques, generating datasets to support numerical modelling and ultrasonic material characterisation methods.
- Contribute ideas to the technical or methodological aspects of the project.

Administration Responsibilities

not applicable

Teaching Responsibilities

not applicable

1.3 Relationships

Line manager: Alexander Velichko

Line manager to (where appropriate):

1.4 Organisation Charts

1.5 Job Hazards/Safety Critical Duties (Pre-employment health screening)

not applicable

2 PERSON SPECIFICATION

2.1 Relevant Experience, Skills and Knowledge

Essential

- Sufficient breadth and depth of specialist knowledge in the area of ultrasonic non-destructive testing.
- Sufficient breadth and depth of specialist knowledge in the area of material science and microstructure characterisation methods.
- Research experience in ultrasonic non-destructive testing.
- Expertise and hands-on experience in conventional microstructure characterisation methods.
- Well-developed analytical skills.

Desirable

- Experience in numerical computations using commercial software packages
- Experience in scientific programming

2.2 Relevant Qualifications

Essential

- A PhD in Engineering, Physics, or a closely related field or near completion, or equivalent research experience in an academic, industrial or clinical setting equivalent to a PhD

2.3 Communication and Interpersonal Skills

Essential

- Ability to communicate complex information clearly, both orally and through the written word.
- Ability to work collaboratively with colleagues and students.
- Ability to organise their own time and work, to meet deadlines, and manage competing priorities.
- Ability to use initiative, and apply creativity, to solve problems that are encountered in the research context.

3 CAREER PATHWAY AND OTHER RELEVANT INFORMATION

3.1 Career Pathways

All members of academic staff have a clear career pathway involving a series of levels with distinct role profiles, each with its unique requirements. Each profile sets out what is expected of an academic at the particular level. The role profiles also set out a collection of competencies expected for each level. Promotion to the next level may occur after these competencies have been attained in conjunction with the expectations outlined in the Promotions Process and Academic Promotions Framework (APF) applicable to the role. .

The academic pathways are as follows:

Career Pathway One - academic roles that combine teaching, research and administrative duties.

Career Pathway Two - academic roles focusing on research and associated administrative duties.

Career Pathway Three – academic roles focusing on teaching and associated administrative pathways

This post is located on Pathway Two. Role Summaries setting out what is expected of an academic at each particular profile level on pathway two can be found below. Please note that an appointment may be made at any level of the pathway.

A schematic diagram of the career pathways can be found at <http://www.bristol.ac.uk/hr/grading/academic/>.

The University has two procedures for promotions depending on the level of promotion being applied for as follows:

Promotion up to Senior Lecturer / Senior Research Fellow
Promotion to Associate Professor or Professor

The procedure for Promotion up to Senior Lecturer / Senior Research Fellow describes the process for anyone on the academic career pathways and is based on the concept of readiness as determined with managers using the Academic Promotions Framework (APF). Eligibility for making a case for promotion is subject to:

1. Having a contractual expectation and meeting the performance requirements described in the Promotion up to Senior Lecturer / Senior Research Fellow process
2. Completion of a full year of service following appointment and successful completion of their Initial Service Review (ISR)
3. Meeting the expectations set out in the CREATE policy for those with teaching responsibilities (pathway 1 and 3), e.g. those seeking promotion to Senior Lecturer should achieve and have been formally notified of their Fellowship (ratified outcome) through the University's CREATE scheme before applying

The procedure for Promotion to Professor covers staff for promotion to profile level d2 (Associate Professor) and profile level e (Professor) on all pathways in the [Academic Career Pathway](#) framework.

3.1.1 Role Summaries

Research Associate (Level a)

Role holders at this level are concerned with *assisting* an individual research leader or team to conduct a particular study (or group of studies). They will generally be involved in data generation and/or collection using standard and well-defined methods developed by others. They will be working under close supervision by, and direction from, a more senior researcher, who will be ultimately responsible for the project. This may be the entry level for some staff who are expected to train and/or develop to take on more senior researcher roles. Role holders will be provided with academic and pastoral support within the department (including counselling on realistic career opportunities) and training will be available designed to develop their competences and to prepare them to take on more responsibilities associated with a higher grade.

Senior Research Associate (Level b)

Role holders at this level will be experienced and professional researchers (or have considerable professional experience) and will be specialists in a particular area or methodology, drawing upon knowledge gained from postgraduate research and/or working within a Level a role. They will be *associated* with a particular project (or projects) and will contribute ideas, and/or enhancement of techniques or methodologies. They will be expected to do some writing for dissemination outside the Department. They will still be working under supervision, but will be expected to take significant initiatives in their work and consult with the Principal Investigator over the details of the project. They may, where practical, contribute to the department's teaching, through supervision of projects, overseeing practical classes, or taking small group classes. They will be provided with academic and pastoral support within the department and training will be available designed to develop their competences (including counselling on realistic career opportunities) and prepare them to take on more responsibilities associated with a higher grade.

Research Fellow (Level c)

Role holders at this level will have substantial experience of research (normally not less than six years). They will initiate and take responsibility for some research projects and may be Principal Investigators or, where a Research Council does not permit this, act as though they were Principal Investigators. They will be involved in administration relevant to their projects (e.g. helping to prepare bids for research funding), managing other researchers and monitoring research budgets. They will be expected to be undertaking research individually and/or collectively and to be advancing the state of knowledge and understanding within their particular area of expertise. They will be publishing regularly in high quality outlets. They are likely to provide some teaching support for the department (consonant with the terms of their funding). They will be expected to be establishing a growing reputation within their particular research field and academic discipline and to be developing and demonstrating intellectual independence.

Senior Research Fellow (Level d)

Role holders at this level will have extensive experience in research and research management. They will normally be Principal Investigators, leading collaborative research bids and research teams, or driving forward innovative research themselves. They will be involved in scholastic projects (e.g. editing journals and academic books), and be making a significant leadership and/or management

contribution within their department or the wider university, to be participating in national/international academic networks and conferences. They may be transferring their knowledge through some teaching and/or supervision to undergraduate or graduate students (consonant with the terms of their funding). Role holders at this level will be independent researchers and will have an established national and growing international reputation within their academic discipline generally and research field in particular.

Professorial Research Fellow (Level e)

Role holders at this level will have very extensive experience of research leadership and related management/administration. They will enjoy a wide recognition for their expertise within the academic community internationally (as evidenced by conference invitations, journal editorships, office holding in specialist groupings, associations with appropriate Research Councils etc.). They will have made recognised and significant contributions to the developing knowledge and understanding of their research area. They will already have responsibilities for the creation, initiation, development and overall management of significant research programmes. They will 'profess' their discipline within the Department, as appropriate and consonant with the terms of their funding. They may also carry significant leadership roles within the Faculty or University.