

# Materials KE Associate

Department	Advanced Forming Research Centre (AFRC) ( <a href="http://www.afrc.org.uk/">www.afrc.org.uk/</a> ), Department of Design, Manufacture and Engineering Management ( <a href="http://www.strath.ac.uk/dmem/">www.strath.ac.uk/dmem/</a> )		
Faculty	Faculty of Engineering ( <a href="http://www.strath.ac.uk/engineering/">www.strath.ac.uk/engineering/</a> )		
Staff Category	Knowledge Exchange	Reference No	515950
Reports To	Materials Modelling Theme Lead	Grade:	7
Salary Range:	£36,024 - £44,263	Contract Type:	Fixed Term (24 months)
FTE:	1 (35 hours/week)	Closing Date	Monday, 8 April 2024
Holidays	31 annual leave & 11 public holidays Option to purchase additional holidays		
Pensions	Contributory pension scheme available to all staff including generous employer contribution.		
Training	Professional Development with <a href="#">Organisational and Staff Development Unit</a> (OSDU) plus external training if required		
Family Friendly Benefits	Generous parental leave provision and options for flexible working		
Health and Wellbeing	University Sport centre, Occupational Health service, access to health and wellbeing events, cycle to work scheme, Employee Assistance Programme, agile working and established carers support network and carer friendly policies		

## Job Advert

The University of Strathclyde in Glasgow possesses a large internationally rated Engineering Faculty with a proud history of successful joint ventures with industrial and enterprise partners. As part of the University's strategic development the Advanced Forming Research Centre (AFRC) has been established near Glasgow's International Airport. The AFRC is the embodiment of a £30 million collaborative investment by Industrial, Academic and Government partners seeking to establish a world-leading research facility for forging and forming technologies. AFRC is a specialized centre within National Manufacturing Institute Scotland (NMIS).

The AFRC is seeking to appoint an experienced Materials Knowledge Exchange (KE) Associate to support the delivery of high value research programmes focused on the materials and residual stresses in forged, formed, welded or additive manufactured components. Recently the Centre has invested significantly in novel forging, advanced materials characterisations and residual stress measurement equipment suitable for large scale investigations and is rapidly developing a multi-disciplinary group that specialises in this area. The Centre is also participating in key NMIS initiatives and programmes like the Digital Factory, with significant contributions to the Additive and Machining activities. The KE Associate will support the delivery of scientific research programmes on management and mitigation of Residual Stresses, processing of materials and general manufacturing, working on measurement, prediction and control of Residual Stresses and distortion, developing experimental techniques for the assessment of Residual Stresses, implementing analytical tools for processing of measurements/results, and simulating industrial-scale thermo-mechanical processes (including but not limited to forging, forming, welding and machining).

The candidate will also be expected to support and contribute to high value industrial funding proposals in support of a range of projects across the Centre. The post holder will be expected to work between the AFRC and its industrial and academic partners and there will be a strong emphasis on knowledge exchange.

To achieve the above the KE will preferably require some research and/or industrial experience in the following technical areas:

- A good basic knowledge of materials and the way that manufacturing processes can develop or modify material's microstructure to achieve desired mechanical properties and stress states.

- The use of finite element based software (e.g. ABAQUS, DEFORM, QForm or similar) for process simulation (e.g. forging, heat treatments, machining), materials modelling, and residual stress and distortion prediction
- Experimental techniques in the measurement of Residual Stresses and characterization of materials
- Programming and data analytic skills to develop experimental techniques in residual stress measurement, and the post-processing of experimental data

The post holder will require the knowledge, skills and experience normally associated with a first degree and PhD for example in Materials Science, Materials Engineering or Mechanical Engineering; we are also interested in candidates with equivalent industrial experience.

To be considered for this role, you will be educated to a minimum of PhD level in an appropriate discipline, or be educated to a minimum of 2:1 Honors degree in addition to significant relevant experience within a relevant industrial environment.

The post holder will also have the ability to work autonomously, plan and prioritise own workload with guidance from a team / project leader, and deal with complex problems presented to them by colleagues. Preferably, the individual will have experience of project planning and delivery, as well as excellent communication and interpersonal skills, with a proven ability to interact with a range of stakeholders from industry and/or academia. Lastly, the post holder may be required to make a contribution to the administrative activities of the AFRC including membership of relevant committees. You will have an established track record in providing engineering solutions in an industrial context as well as experience of supporting research and development of manufacturing processes. You will have excellent troubleshooting skills, including a methodical approach to solve complex problems and you will have the ability to work as part of a multi-disciplinary team.

## Job Description

### Brief Outline of Job:

With guidance from the Materials Modelling Theme Lead and Materials and Residual Stress Team Lead you will contribute to the delivery of engineering projects, taking responsibility for the delivery of the projects and the dissemination of research outcomes. You will be responsible for undertaking and supporting research and development relevant to the AFRC's core competencies: forging and forming, heat-treatment, machining processes and material modelling, exploiting your experience and expertise in materials science and engineering. You will be expected to contribute to the generation of proposals for creating research and commercial income that will enhance the AFRC standing, capability and reputation. The KE Associate will also be expected to deliver projects to time and within budget, and provide project updates as required for the relevant Team / Research Lead, senior or programme management teams and customers/stakeholders. You will be expected to support business development activity at the AFRC by various means including sharing specialist/expert knowledge, hosting guests/tours and demonstrating AFRC capability.

### Main Activities/Responsibilities:

1.	Carry out research in the area of Materials and Residual Stresses, the effect of forging and forming processes on microstructure evolution, effects of heat treatment and subsequent process on mechanical properties and residual stresses.
2.	Enhance the AFRC manufacturing related capability by proposing improvements based on estimated future requirements and research needs.
3.	Undertake scientific research and engineering solutions on manufacturing related to materials characterisations, testing and modelling, and develop of appropriate methodology for part manufacturing.
4.	As part of a wider knowledge exchange/project group or programme, develop knowledge exchange objectives, identify and secure funding by develop proposals for knowledge exchange activities.
5.	Design and manage experimental trials using known experimental techniques (e.g. statistical process control (SPC)) and modelling.
6.	Work as part of a knowledge exchange project team to deliver against specific requirements of research and knowledge exchange projects.
7.	Plan and manage own workload, with minimal guidance from Team/Project Lead as required.
8.	Conduct individual and/or collaborative engineering research activities, including determining appropriate research methods and contributing to the development of new research methods for industrial applications.

9.	Identify opportunities for strategic development of new projects by building contacts internally and externally, participating in networks for the exchange of information, form relationships with customers, suppliers and colleagues for future collaboration.
10.	Write up reports, individually or in collaboration with colleagues, for external organisations, and further write up findings for additional dissemination (e.g. professional publications or peer review journal publication) as appropriate.
11.	Assist in the training and development of staff and external clients in manufacturing engineering methods and processes.
12.	Contributing to collaborative decision making with colleagues on academic/engineering content in relevant areas of research.
13.	Contributing to the overall AFRC growth by working as an integral part of the AFRC team effort, inputting to the research programme and capability development, as necessary, to meet strategic objectives.
14.	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)

- E.1 Good first degree (minimum class 2:1) in a relevant engineering discipline, e.g Mechanical Engineering, Materials Science or Manufacturing, or equivalent relevant work experience.
- E.2 PhD in a relevant engineering discipline, or equivalent relevant work experience.
- D.1 Member of professional body in an appropriate discipline.

### Experience

- E.3 Knowledge of the influence of forming / forging processes on material behaviour with particular reference to material's microstructure evolution, mechanical properties, residual stresses and the inter-connection between them
- E.4 Knowledge of Residual Stress measurements techniques and hands-on experience working with Residual Stresses
- E.5 Knowledge and experience of modelling, including materials and residual stress modelling, and ability to work with a range of software packages (e.g., Abaqus, DEFORM, Forge NxT, QFORM, Simufact).
- E.6 Experience with designing and developing experimental set-ups, working with sensors and controllers for the execution of and data collection during a trial
- E.7 Knowledge of analytical and/or experimental validation and verification techniques and approaches.

### Job Related Skills and Achievements

- E.8 A broad knowledge of materials, including both ferrous and non-ferrous alloys – especially those relevant to the aerospace sector;
- D.2 Knowledge of a range of materials characterisation techniques including mechanical testing, and microstructural characterisations.
- E.9 Strong analytical and programming skills and a proven ability to write scripts for pre and post processing of results.
- E.10 An understanding of the effect of processing on materials e.g. grain size, recrystallization, flow behaviours, residual stress evolution.
- E.11 An ability to plan and organise own workload effectively with general supervision from senior colleagues.
- E.12 Evidence of contribution to the successful planning and delivery of projects within an academic or industrial environment.
- D.3 Experience of knowledge exchange related activities.

### Personal Attributes

- E.13 Excellent written and verbal communication skills, with an ability to interact with a range of stakeholders in both industry and academia.
- D.4 An ability to disseminate results and to contribute to research and commercial proposals.
- E.14 An ability to work as part of a team, through participation in collaborative projects, and developing evidence of leadership.

## Other Relevant Factors

E.15 An ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

## Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted 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 Ioannis Violatos, Materials Modelling Theme Lead ([ioannis.violatos@strath.ac.uk](mailto:ioannis.violatos@strath.ac.uk) / 01415345517).

### 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 well-being 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](#).

### Relocation

Where applicable, the University offers a relocation package to support new employees who meet the eligibility criteria. The relocation package is offered as a contribution towards costs incurred, and is designed to be flexible, allowing staff to use the financial support available in the way that will be most helpful to them. Further details are outlined in the Relocation Policy.

### Interviews

Formal interviews for this post will be held on a date to 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.

