

Materials Modelling KE Associate

Department	Advanced Forming Research Centre (AFRC) (www.afrc.org.uk/), Department of Design, Manufacture and Engineering Management (www.strath.ac.uk/dmem/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Knowledge Exchange	Reference No	462966
Reports To	Materials Modelling Theme Lead	Grade:	7
Salary Range:	£34,308 - £42,155	Contract Type:	Fixed Term (24 months)
FTE:	1 (35 hours/week)	Closing Date	Thursday, 16 March 2023

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.

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 characterisations, assessments and modelling of microstructure and mechanical properties in forged or formed components. Recently the Centre has invested significantly in novel forging equipment suitable for large scale investigations and is rapidly developing a multi-disciplinary group that specialises in this area. The KE Associate will also support the delivery of scientific research programmes on materials modelling, simulation of industrial-scale manufacturing processes such as forging (e.g., open-die and closed-die) and forming, and development of analytical tools for processing of materials.

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.
- The use of finite element based software (e.g. ABAQUS, DEFORM, QForm or similar) for process simulation (e.g. forging, residual stress prediction), and microstructure modelling
- Techniques of materials characterisation e.g. SEM, EDX, WDS, EBSP, optical microscopy and mechanical testing

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: forming, forging, process and material modelling, and exploiting your expertise in materials characterisation and testing. 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 modelling, the effect of forging and forming processes on microstructure evolution, effects of heat treatment and subsequent process on mechanical properties.
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 forging and forming related materials characterisations and development 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)).
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.
Experience	
E.3	Knowledge of the influence of forming / forging processes on material behaviour with particular reference to material's microstructure evolution and mechanical properties and inter-connection between them
E.4	Knowledge and experience of modelling, including materials and microstructure modelling, multi-scale finite element modelling, and ability to work with a range of software packages (e.g., Abaqus, DEFORM, Forge NxT, QFORM, Simufact).
E.5	Strong analytical skills with a significant knowledge of computational materials and strong ability to write user sub-routines for implementation in simulation packages.
E.6	Knowledge of analytical and/or experimental validation and verification techniques and approaches.
Job Related Skills and Achievements	
E.7	A broad knowledge of materials, including both ferrous and non-ferrous alloys – especially those relevant to the aerospace sector;
D.1	Knowledge of a range of materials characterisation techniques including mechanical testing, and microstructural characterisations.
E.8	An understanding of the effect of processing on materials e.g. grain size, recrystallization, flow behaviours, residual stress evolution.
E.9	An ability to plan and organise own workload effectively with general supervision from senior colleagues.
E.10	Evidence of contribution to the successful planning and delivery of projects within an academic or industrial environment.
D.2	Experience of knowledge exchange related activities.
Personal Attributes	
E.11	Excellent written and verbal communication skills, with an ability to interact with a range of stakeholders in both industry and academia.
D.3	An ability to disseminate results and to contribute to research and commercial proposals.
E.12	An ability to work as part of a team, through participation in collaborative projects, and developing evidence of leadership.
Other Relevant Factors	
E.13	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 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 Ioannis Violatos, Materials Modelling Theme Lead (ioannis.violatos@strath.ac.uk / 01415345517).

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.

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.

