Process Modeller/Research Associate: Forging and Incremental Forming Processes Modelling

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	Research	Reference No	455957
Reports To	AFRC Engineering Director via AFRC Team Lead	Grade:	7
Salary Range:	£34,308 - £42,155	Contract Type:	Open Contract
FTE:	1	Closing Date	Wednesday, 5 October 2022

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 £60 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 and enthusiastic Research Associate to work on the modelling of manufacturing processes within a range of Forging and Incremental Technologies (FIT), such as open die forging, closed die forging, isothermal forging, radial forging, flow forming etc., and relevant heating processes associated with these processes. The candidate will also be able to participate and contribute to high-value industrial funding proposals in key areas related to processing modelling. The post holder will be expected to work between the AFRC and its industrial/research partners.

To achieve the above the Research Associate will require significant research and/or industrial experience in two or more of the following technical areas:

- Non-linear finite element modelling/numerical analysis of complex materials and processes,
- The modelling of processing (forging, forming) of metallic alloys and microstructural development,
- The development of constitutive models that link mechanical properties and microstructure, and the ability to integrate such models into commercial or bespoke software packages,
- The modelling of industrial heating processes,
- Knowledge of analytical and experimental methods of validation/verification of simulation,

The post holder will require the knowledge, skills and experience normally associated with a first degree and PhD for example in mechanical/materials engineering or design engineering. Candidates with equivalent industrial experience may also be considered. You will have an established track record in leading the delivery of engineering solutions in an industrial context, as well as experience in taking a leading role in the research and development of manufacturing processes. You will have the ability to work autonomously, plan and prioritise your own workload with minimal inputs from higher management, and deal with complex problems presented to you by colleagues. You will have experience in 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 academia.

Job Description

Brief Outline of Job:

With minimal guidance from the AFRC Team/Theme Lead, to ensure the delivery of engineering projects, taking responsibility for the delivery of research projects with AFRC partners and customers. Responsible for leading AFRC programmes of work in the development of modelling solutions that facilitate the development of "right first time" solutions for component manufacture. To contribute to the generation of research objectives and proposals for creating research and commercial income that will enhance the AFRC research standing, capability and reputation. To plan, co-ordinate and deliver research projects on time and within budget and provide project updates as required for the relevant Team/Theme Lead, senior or programme management teams and customers/stakeholders. 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 developing/enhancing process modelling capabilities on forging and incremental forming processes and related heating processes.
2.	Develop constitutive models to integrate the dynamics of mechanical and microstructural development within a range of metallic alloys based on nickel, titanium, aluminium, magnesium and steel during thermomechanical processing
3.	Work with process engineers to develop and manage experimental trials for validating simulation results.
4.	Contribute to identifying new approaches/techniques or technologies and ensure that any IP generated is recognised and managed appropriately.
5	Lead/participate in projects to deliver against specific requirements of research programmes on simulation.
6.	Respond to industrial enquiries for assistance in support of challenges and preparation of statements of work, quotations and funding applications.
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.	Contribute to collaborative decision making with colleagues on academic/engineering content in relevant areas of research.
13.	Contribute 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.

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	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.
E2	PhD in a relevant engineering discipline, or equivalent relevant work experience.
D1	Chartered Engineer/Scientist, Member of professional body in an appropriate discipline.

Experience

E3	Significant experience of modelling and simulation within an academic or industrial enterprise related to metal processing.
E4	Extensive experience of non-linear finite element modelling of manufacturing systems.

E5	Experience of analytical and/or experimental validation and verification techniques and approaches.
Job Related Skills and Achievements	
E6	Direct experience of material process simulation for research and development activity and/or problem-solving.
E7	Knowledge of thermomechanical processing, microstructure evolution and mechanical properties of alloys
E8	An ability to plan and organise own workload effectively with general supervision from senior colleagues.
E9	Evidence of contribution to the successful planning and delivery of projects within an academic or industrial environment.
D2	Experience of knowledge exchange related activities.
Personal Attributes	
E10	Excellent written and verbal communication skills, with an ability to interact with a range of stakeholders in both industry and academia.
D3	An ability to disseminate results and to contribute to research and commercial proposals.
E11	An ability to work as part of a team, through participation in collaborative projects, and developing evidence of leadership.
Other Relevant Factors	
E12	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 Jianglin Huang, Theme Lead of Process Modelling & Simulation - Forging & Incremental Technologies (jianglin.huang@strath.ac.uk/ 0141-534-5641).

Conditions of Employment

Conditions of employment relating to Research Staff can be found here: 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.

Equality and Diversity

The University of Strathclyde is a socially progressive institution that strives to ensure equality of opportunity and celebrates the diversity of its student and staff community. Strathclyde is people-oriented and collaborative, offering a supportive and flexible working culture with a deep commitment to our equality, diversity and inclusion charters, initiatives, groups and networks.

We strongly encourage applications from Black, Asian and minority ethnicity, women, LGBT+, and disabled candidates and candidates from lower socio-economic groups and care-experienced backgrounds.

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.