



**Job Title:** Research Associate in innovative contoured nozzles for cold spraying high-performance materials  
**Salary:** £39,906 to £41,064 per annum  
**Grade:** 7  
**Department:** Engineering  
**Hours/Contract:** Part-time (0.8 FTE/ 29 hours per week) and fixed-term until 30 June 2026  
**Job Family:** Teaching and Research  
**Job Reference:** 12121

### Role Purpose

To assist the Principal Investigator in delivering the project “US-UK joint research in innovative contoured nozzles for cold spraying high-performance materials”, ending May 2026. Specifically, use the nozzle design workflow by Zavalan and Rona (2023) to design nozzles for the funder’s cold spray system VRC Gen III or Gen IV. Be responsible for delivering the parametric nozzle shape optimization by coupled Computational Fluid Dynamics and Dispersed Particle Modelling in ANSYS Fluent. Use computer-based automatic optimization with Matlab as the master process, driving two FORTRAN90 aero-line generators, ICEMCFD mesh generator, Ansys Fluent solver, to maximise a multi-objective performance function. Use proficiently Linux scripts for running on high-performance computing platforms. Travel to the USA is required for two weeks, twice during the project, to knowledge transfer by hands-on demonstration and training the workflow at the funder’s premises.

### Main Duties and Responsibilities

#### Research

- To apply the Zavalan and Rona (2023) cold spray nozzle design workflow to high-performance materials, taking responsibility for adapting the workflow to VRC Gen IV and for the knowledge transfer elements of the planned research.
- To lead in the collection, evaluation and interpretation of the research data from the simulations and experimental verification of the nozzle performance, and work autonomously to attain project milestones.
- To contribute to the development of the choice of techniques, critiques, approaches, models and methods.
- To contribute to the overall research programme using innovative research models, novel approaches and techniques.
- In agreement with the line manager, liaise with the project funder to progress the research.
- To lead in writing up research findings for dissemination amongst the research team and broader international community, and develop ideas and contributions for future grants, technical outputs.
- To represent the research group by disseminating results/findings at national and international conferences and broader community.
- To contribute to research outputs as a co-author to journal articles, technical papers, monograph, book chapter.





- To contribute as a team member to the development of a broader programme, this may include contributing to the writing of research bids/grants.
- With the support of colleagues, identify opportunities to apply for fellowships and/or further project grants.
- To provide guidance to other staff and students (involved in the research programme).
- To actively seek opportunities to carry out multi-disciplinary research with other research groups at the University or stakeholders external to the University, with the approval of the Principal Investigator (PI).

## Professional Development

- Duties and opportunities to engage in work that support your own professional development.

## Impact and Knowledge Exchange

- Network and contribute to the maintaining and furthering of the wider research programme and research area.
- To contribute to industry collaborations.
- To consult effectively on own specialism directly with people external to the University.
- To engage positively and pro-actively in research impact.

## Leadership and Citizenship

- Guidance to other team members both research staff and students.
- Pro-actively build networks and collaborations.
- Providing mentoring and coaching to Early Career Researchers and research students.

## Internal and External Relationships

Regular meetings with members of the programme research group

Meeting members of the School of Engineering for critical discussion of the research and exchange of new ideas and approaches that might benefit the research.

Liaison with external collaborators.

## Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Prioritise tasks within agreed work schedules;
- Plan for specific aspects of research incorporating issues such as deadlines,





project milestones and overall research aims;

- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project.

## Qualifications, Knowledge and Experience

### Essential

- PhD or equivalent in appropriate discipline or the equivalent professional qualification and experience\*
- Evidence of a contribution to peer-reviewed journal papers or equivalent e.g. technical report/writing a piece of software\*
- Evidence of proven analytical problem-solving capability\*
- Expertise in approaches/models and analytical techniques relevant to modelling particle-laden compressible jets and ability to develop new ones where required.

## Skills, Abilities and Competencies

### Essential

- Willingness and ability to work with internal and external stakeholders, specifically with the project funder DEVCOM ARL, Aberdeen Proving Ground, MD\*
- Evidence of continued development of subject expertise in cold spray aerodynamics, specifically in the use of coupled Computational Fluid Dynamics and Dispersed Particle Modelling and of the Methods of Characteristics for goal-driven compressible aerodynamic design\*
- Excellent communication skills – written and verbal evidenced by the ability to communicate complex information\*
- Evidence of being able to work with sensitive information and implement strict data storage and processing protocols\*
- Evidence of working effectively as part of a team and the ability to work independently \*
- Working towards independence and ability to be involved in collaborative research
- Evidence and commitment to Continuous Professional Development (CPD) for yourself, and encourage commitment to learn and develop in others
- Collegiate member of a research team

### Desirable

- Budget management skills

***\*Criteria to be used in shortlisting candidates for interview***



## Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

## Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

## Supporting University Activities

As a University of Leicester citizen, you are encouraged to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We encourage all staff as citizens to work flexibly across the University if required. If supporting these activities is likely to affect your workload, please speak to your line manager in the first instance.

## University Values

**Inclusive** - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

**Inspiring** - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

**Impactful** - As Citizens of Change we will generate new ideas which deliver impact and empower our community.

## Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognizes and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equity support our efforts to attract a diverse range of high-quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equity, diversity and inclusion.

