University of Nottingham
UK | CHINA | MALAYSIA

Role profile

Job title	Research Fellow in Machining (Title will be 'Research Associate' where an appointment is made before PhD is completed)	Job family and level	Research and Teaching Level 4 (Appointment will be Level 4 Career Training Grade where an appointment is made before PhD has been completed)
School/ Department	Faculty of Engineering, Rolls-Royce Manufacturing and On-Wing University Technology Centre (UTC)	Location	Advanced Manufacturing Building at Jubilee campus

Purpose of role

This post will focus on the study of advanced manufacturing technologies and surface integrity inspection methods for difficult-to-machine materials (e.g. composites and superalloys). To conduct original research of national and international standing leading to high quality publications as a member of the Rolls-Royce UTC in Manufacturing and On-Wing Technology, Faculty of Engineering.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	**% time per year**
1	**Research** • To undertake research of international excellence compatible with existing activity within Department of Mechanical, Materials and Manufacturing Engineering, Rolls-Royce University Technology (UTC) in Manufacturing and On-Wing Technology. • To develop new research methodology and systems and undertake validation experiments. • Manage and undertake research projects, including meeting organization, reports preparation etc.	70%
2	**Dissemination of research results** • To write research reports and papers in order to disseminate research results and develop a track record of published research findings in internationally respected peer-reviewed journals. Further dissemination of results should also occur through invited oral and poster presentations at international meetings, conferences and seminars. • To write reports corresponding to the development of the research work as part of the deliverables of external funded projects.	10%
3	**Support junior members of the group** • Supervise and examine research projects undertaken by undergraduate and master level students if required.	10%

4	**Engagement** • Participate in the regular meetings of the Machining and Condition Monitoring Group (MCM) and Rolls-Royce Manufacturing and On-Wing University Technology Centre (UTC). • Facilitate the growth of both the MCM group and UTC through actively seeking funding sources, leading research proposals, and ensuring research excellence. • Contribute to the research work of the Machining and Condition Monitoring Group and collaborate with their partners as required.	5%
5	**Adhere to H&S regulations** • Operate within the safety systems, IT code of practice etc. as required by the Division, Department and University.	5%

Person specification

	Essential	Desirable
Skills	• Skills in laser related manufacturing techniques. • Knowledge on surface characterisation methods, such as Raman spectroscopy, EBSD, XRD, SEM, FIB, TEM, micromechanics etc. • Innovative and creative thinker. • Dedicated and hardworking with a good working attitude for a demanding role. • Excellent planning and organisational skills with an ability to ensure deadlines are met. • Excellent communication skills; able to effectively communicate technical information to a variety of audiences. • Ability to work in a team as well as on own initiative. • Highly skilled in programming in MATLAB/Python • Relevant experience using different data acquisition systems • Good general IT skills, including a good working knowledge of word, PowerPoint, Excel, Outlook, etc. • Skills in hybrid machining of difficult-to-cut materials (i.e., superalloys and biomaterials). • Independent research capabilities • Ability to work with industrial/academic partners	• Research management and ability to lead projects. • Proven team working/leadership. • Have a genuine interest in engineering. • Desire to develop expertise in this area of engineering research. • Expertise in laser manufacturing technologies with emphasis on surface integrity analysis of coating materials. • Understanding of materials properties will be beneficial.
Knowledge and experience	• Experience in hybrid machining of difficult-to-cut materials. • Experience in materials characterisation (e.g., EBSD, SEM, XRD). • Experience in independent development/construction of mechanical systems • Experience in advanced materials characterisation about surface integrity analysis of processed workpiece • Publications in high-impact academic journal • Experience of carrying out successful projects.	• Experience in analysis of biomateirals and superalloys and its surface integrity. • Experience in delivering presentations at workshops or conference. • Experience of using: -MATLAB/Python -CAD packages (e.g. Solid Works) -NI data acquisition system • Knowledge in sensor systems and electronic interfaces for mechatronic systems • Knowledge in hybrid fields machining

Qualifications, certification and training (relevant to role)	• Undergraduate degree (BEng / BSc) in mechanical engineering or in a closely related discipline. • PhD (or about to obtain).	• PhD in mechanical engineering.

The University strongly endorses Athena SWAN principles, with commitment from all levels of the organisation in furthering women's careers. It is our mission to ensure equal opportunity, best working practices and fair policies for all.

Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

Valuing people — Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.

Taking ownership — Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.

Forward thinking — Driven to question the status quo and explore new ideas, supporting the team to "lead the way" in terms of know-how and learning.

Professional pride — Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.

Always inclusive — Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

Key relationships with others

Line manager

Role holder

Key stakeholder relationships