



Job title	Research Fellow (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 – PEMC Research Group	Location	PEMC Centre, Triumph Road, Jubilee Campus, Nottingham

Purpose of role

This role will support the development and testing of power modules for power electronic systems, to meet performance, reliability, and cost challenges, in two new, multi-institutional research projects.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Plan, develop and conduct individual and collaborative research tasks in the area of packaging of power semiconductor devices. Sustain and pursue a personal research plan and present findings at internal project meetings. Take responsibility for planning future research tasks.	40%
2	Produce technical reports and written deliverables.	10%
3	Package devices and develop prototypes of power modules, based on research outputs, for internal use and delivery to project partners.	30%
4	Present results at project review meetings, including to external academic and industry partners. Present results at national and international academic conferences.	5%
5	Guide and mentor other researchers and research students. Provide technical support to researchers working in related areas.	5%
6	Maintain good working relations with external partners through effective and regular communication.	5%
7	Any other duties appropriate to this post as required by line manager	5%

Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> ▪ Excellent communication and presentation skills ▪ Well organised and self-motivated, able to work independently and as part of a team ▪ Develop and maintain positive relationships with academic and industry partners ▪ Experience or knowledge of electromagnetic and thermal design, modelling, simulation, and optimisation ▪ Excellent interpersonal and IT skills 	<ul style="list-style-type: none"> ▪ Demonstratable experience with power module prototyping and testing ▪ Knowledge or experience with prototyping and testing power semiconductor package technologies ▪ Reliability testing and analysis
Knowledge and experience	<ul style="list-style-type: none"> ▪ Experience using Finite-Element type packages for power electronic system design ▪ Understanding on how packaging optimisation and choices affect the performance and reliability ▪ Experience in at least two of the following subjects: <ul style="list-style-type: none"> - Power electronic systems, their electrothermal behaviour and design challenges - Packaging technology processes for high voltage wide bandgap semiconductor devices and understanding on how they impact the performance, reliability, and cost - Electromagnetic and thermal design, modelling, simulation, and optimisation - 3D Finite-Element type software packages (e.g. Ansys Mechanical and Electromagnetic packages, CST Studio) - Prototyping and testing of power module performance, for example 	<ul style="list-style-type: none"> ▪ Knowledge of materials science in the context of power semiconductor packaging ▪ Knowledge of reduced order modelling for fast virtual prototyping ▪ Knowledge of operation and performance of wide bandgap semiconductor devices

	<p>double pulse testing</p> <ul style="list-style-type: none"> - Reliability testing and analysis, for example power cycling of packaged devices 	
<p>Qualifications, certification and training (relevant to role)</p>	<ul style="list-style-type: none"> ▪ BEng/Meng or equivalent first degree in electrical/electronic engineering or a related subject ▪ Either hold, or be about to obtain, a PhD in electrical/electronic engineering or a related subject 	



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

