



Job title	Research Associate/Fellow	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

The successful candidate will support two new research projects by experimentally characterising the reliability of power electronic components and developing models based on the results.

	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 reliability investigations for wide-bandgap power electronic systems. 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	Produce reports, datasets and computer models, based experimental investigations, 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"> • The ability to develop computer models using industry standard tools such as MATLAB/Simulink. • Excellent communication and presentation skills • General electronic laboratory practical skills required for experimental characterisation of electronic components. 	<ul style="list-style-type: none"> • Computer programming skills in a relevant language for model implementation in custom software. (e.g. C/C++, Python)
Knowledge and experience	<ul style="list-style-type: none"> • Experience working independently within a multi-disciplinary research team, such as might be gained from working within an academic research group. • Knowledge of the fundamental physics underpinning failure in electronic components, and the typical failure mechanisms in electronic components. 	<ul style="list-style-type: none"> • Knowledge of electronic system packaging and assembly techniques, and the impact of these techniques on system reliability and/or experience using equipment for packaging semiconductors (e.g. soldering, sintering, wirebonding). • Knowledge of power semiconductor devices behaviour (e.g. MOSFETs, diodes, IGBTs), their non-ideal behaviour and typical failure modes. • Experience using commercial Finite-Element type simulation software for electro-thermal or thermo-mechanical simulation of electrical/electronic systems or components. • Experience using equipment for characterisation of electronic components: e.g. electrical characterisation of semiconductors (static I-V curves, capacitance measurement, double pulse tests); thermal characterisation of components (thermal impedance measurement); reliability characterisation methods (thermal cycling and destructive/non-destructive evaluation techniques such as SEM, X-ray tomography).
Qualifications, certification and training	<ul style="list-style-type: none"> • BEng, MEng or equivalent degree in electrical/electronic, mechanical or materials engineering, or a related subject 	

(relevant to role)	<ul style="list-style-type: none">• Either hold, or be about to obtain, a PhD in electrical/electronic, mechanical or materials engineering or a related subject.	
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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

