



THE POST

College:	Engineering, Mathematics and Physical Sciences http://emps.exeter.ac.uk/
Post:	Research Fellow – Physics and Engineering of Novel Electromagnetic Materials and Devices
Reference No:	P60125
Grade:	F
Reporting To:	Alastair Hibbins, Professor of Metamaterial Physics

The above full time post is available immediately for 3 years in the College of Engineering, Mathematics and Physical Sciences.

Job Description

Main purpose of the job:

The College of Engineering, Mathematics and Physical Sciences wishes to recruit a Postdoctoral Research Fellow to support the work of Alastair Hibbins, Professor of Metamaterial Physics. This post is available as soon as possible, but no later than 1 Oct 2018 for a period of 3 years. The successful applicant will join TEAM-A: The tailored electromagnetic and acoustic materials accelerator, an EPSRC Prosperity Partnership programme. This partnership builds upon the successful relationship that exists between the Departments of Physics and Engineering at the University of Exeter, and QinetiQ. Its ambition is to develop advanced materials that can be used to control and manipulate the propagation of electromagnetic and acoustic energy, in a highly tailored, bespoke fashion, and develop innovative techniques for their cost-effective manufacture.

The role holder will be employed by the University of Exeter, and supervised by Prof Alastair Hibbins, whilst being primarily based at QinetiQ - an industry-leading company of scientists and engineers - due to the UK-unique facilities that are available at their Farnborough headquarters. This is a fantastic opportunity for an early stage researcher to gain experience in a leading high technology company, whilst at the same time maintaining their academic profile.

Due to the nature of the work that QinetiQ is involved with, applicants will need to obtain a security clearance (to be arranged by QinetiQ). For this reason, we have limited our applications to UK nationals who have resided in the UK for at least the past 5 years – candidates who are not **current UK Nationals** will not be considered. We apologise if this means you are no longer eligible to apply; however, access to QinetiQ's facilities requires UK nationality and we are unable to make exceptions.

The post will focus upon novel technologies for the control and redirection of electromagnetic energy. While not exclusively, the emphasis will be the design, modelling and characterisation of materials that interact with low frequency radiation, ranging from RF, to microwave to THz. This is an area of relevance to applications including: the redesign of wind farms to ensure their compatibility with neighbouring radar systems; providing good WiFi and mobile phone access in buildings; and the optimisation of inventory systems such as RFID. The type of research will be wide-ranging, including (but not limited to) fundamental physics, analytical and numerical

modelling, experimental characterisation, and device design and testing. For this reason, the successful applicant will be familiar with condensed matter physics and photonics, and aspects of electrical engineering will also be valuable. The ideal candidate will also have experience of running their own project, and working as part of a team with academic and industrial partners.

Examples of initial topics include novel conductors to create switchable, flexible conductive components in appliques, for application as wires and RF control devices; and the design of resonant materials and structures that can redirect and attenuate RF signals in a bespoke manner, enabling novel RF lenses, beam-steerers and attenuators. These studies will involve the use of QinetiQ's extensive materials characterisation facilities, many of which are unique in the UK, and the chance to meet QinetiQ's customers and work on the various challenges that they set us.

POSTDOCTORAL RESEARCH FELLOW

Main duties and accountabilities:

1. To undertake research as appropriate to the field of study including:
 - Writing up research work for publication;
 - Developing research objectives and proposals for own or joint research;
 - Making presentations at national and international conferences and similar events;
 - Dealing with problems which may affect the achievement of research objectives and deadlines;
 - Analysing and interpreting the results of own research and generating original ideas based on outcomes;
 - Using new research techniques and methods;
 - Using initiative and creativity to identify areas for research, developing new research methods and extending the research portfolio;
 - Using creativity to analyse and interpret research data and draw conclusions on the outcomes.
2. To work in collaboration with colleagues as appropriate to the field of study including:
 - Contributing to collaborative decision making within the research group;
 - Contributing to the production of collaborative research reports and publications.
 - Preparing papers and presenting information on research progress and outcomes to bodies supervising research, e.g. steering groups.
3. To communicate complex information, orally, in writing and electronically.
4. To prepare proposals and applications to external bodies, e.g. for funding and contractual purposes
5. To contribute to the planning of research projects.
6. To use research resources, laboratories and workshops as appropriate and to take responsibility for reducing hazards and for the health and safety of others. Where appropriate, will also be responsible for conducting risk assessments.
7. To monitor project budgets as appropriate.
8. To engage in continuous professional development and to be responsible for continually updating knowledge and understanding in field of study or specialism and for developing skills.

This job description summarises the main duties and accountabilities of the post and is not comprehensive: the post-holder may be required to undertake other duties of similar level and responsibility. Please visit the Human Resources website to view the Research Fellow role profiles.

Person Specification

Competency	Essential	Desirable
Attainments/Qualifications	PhD (or nearing completion) or equivalent qualification / experience in a related field of study, with a strong physics component.	A background in microwave materials (ideally metamaterials), photonics or electrical engineering.
Skills and Understanding	Sufficient knowledge in the discipline (e.g. physics or electrical engineering) and of research methods and techniques to work within established research programmes.	Evidence of research activity and published research. Be skilled in electromagnetic simulations, and relevant experimental techniques.
Prior Experience	Ability to successfully manage a research project	Ability to collaborate with academic and non-academic partners on a research project. Track record of completing projects on time. Ability to train and/or mentor less experienced colleagues
Behavioural Characteristics	Excellent written and verbal communication skills, and the ability to communicate material of a specialist or highly technical nature. Able to engage with multiple strands of work, including secondary research projects, and non-research activities.	Ability to form networks and actively disseminate research to academic and industry partners for the effective exchange of knowledge. Ability to initiate, plan and implement new research proposals and projects.

Informal Enquiries

Before submitting an application you may wish to discuss the post further by contacting Professor Alastair Hibbins, telephone **01392 722100** or email A.P.Hibbins@exeter.ac.uk