



## THE POST

<b>College:</b>	<a href="#"><u>College of Engineering, Mathematics and Physical Sciences</u></a>
<b>Post:</b>	<b>Research Fellow – Physics and Engineering of Novel Electromagnetic Materials and Devices</b>
<b>Reference No:</b>	<b>R60125</b>
<b>Grade:</b>	<b>F</b>
<b>Reporting To:</b>	<b>Alastair Hibbins, Professor of Metamaterial Physics</b>

### 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. 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.

### **Main duties and accountabilities:**

1. To undertake research as appropriate to the field of study. The responsibilities may include all or some of the following:
  - Acting as principal investigator on research projects;
  - Developing research objectives, projects and proposals;
  - Conducting individual or collaborative research projects;
  - Identifying sources of funding and contributing to the process of securing funds;
  - Extending, transforming and applying knowledge acquired from scholarship to research and appropriate external activities;
  - Writing or contributing to publications or disseminating research findings using media appropriate to the discipline;
  - Making presentations at conferences or exhibiting work in other appropriate events;
  - Assessing, interpreting and evaluating outcomes of research;
  - Developing new concepts and ideas to extend intellectual understanding;
  - Resolving problems of meeting research objectives and deadlines;
  - Developing ideas for generating income and promoting research area;
  - Developing ideas for application of research outcomes;
  - Deciding on /following research programmes and methodologies, often in collaboration with colleagues and sometimes subject to the approval of the head of the research programme on fundamental issues.
2. To contribute to teaching and learning programmes in the School and to supervise postgraduate research students.
3. To act as research team leader including:
  - Mentoring colleagues with less experience and advising on their professional development;
  - Coaching and supporting colleagues in developing their research techniques;
  - Supervising the work of others, for example in research teams or projects;
  - Developing productive working relationships with other members of staff;
  - Co-ordinating the work of colleagues to ensure equitable access to resources and facilities;
  - Dealing with standard problems and help colleagues to resolve their concerns about progress in research.
4. To routinely communicate complex and conceptual ideas to those with limited knowledge as well as to peers using high level skills and a range of media and to present the results of scientific research to sponsors and at conferences.
5. As determined by the nature of the project and at the direction of the PI, to plan, co-ordinate and implement research programme activity including:
  - Managing the use of research resources and ensuring that effective use is made of them;
  - Monitoring and reporting on the use of research budgets;
  - Helping to plan and implement commercial and consultancy activities;
  - Where appropriate, to plan and manage own consultancy assignments.

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**

<b>Competency</b>	<b>Essential</b>	<b>Desirable</b>
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.  Be a nationally recognised authority in the subject area.
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.

### **Terms & Conditions**

Our Terms and Conditions of Employment can be viewed [here](#).

### **Further Information**

Please see our [website](#) for further information on working at the University of Exeter.