



Further Information: HR7.

Job title	Research Assistant in Photonics Integration of Graphene and Related Materials
Grade	5
Salary range	Research Assistant: £32,296 - £34,866
Staff Group	Research
Department Institution	Department of Engineering – Cambridge Graphene Centre

Role-specific information

Role Summary

The aim is to develop a new class of integrated photonic and optoelectronic devices based graphene and related materials (GRMs), combining the versatile properties of GRMs with conventional three-dimensional semiconductors. The post holder will investigate the large area production of graphene, BN, MoS₂ and other layered materials, optimize their transfer process in view of their application in energy, electronics and photonics. This will include design, commissioning, assembling and optimization of new growth/production and transfer equipment. Such devices will then be used in a wide range of applications such as on-chip optical routing, flexible optoelectronics, light emission, optical sensing and quantum communications. This is an ambitious research program, with a strong interdisciplinary nature, across photonics, plasmonics, device physics, electrical engineering and nanotechnology, and it will require the realization of novel devices for wide range of applications such as photodetectors, optical modulators, optical amplifiers, lasers, biosensors etc. based on integrated GRMs

The successful candidate will hold a Bachelor or master's degree in Applied Physics, Material Science, Nanotechnology, Chemistry or Electrical Engineering with experience in photonics, optoelectronics in graphene and related materials, physics of low dimensional systems, plasmonics, near-field optics, CMOS technology and nanofabrication including, e-beam lithography and laser writing, on-chip optical and electrical characterizations, pump-probe and fast electro-optical measurements. Preference will be given to candidates with experience in silicon photonics, fabrication and optoelectronic characterization of graphene, related layered materials or other nanoscale photonic devices. An understanding of device physics, the physics of graphene and related materials is required.

The role holder would possess sufficient breadth or depth of knowledge in the discipline and of research methods and techniques to work within own area. The candidate will also have the ability to continually update knowledge, develop skills

and engage in continuous professional development. They'll also have experience of managing their own workload.

Key Responsibilities

Research and Scholarship	70%
<ul style="list-style-type: none"> • Undertake basic research for example by preparing, setting up, conducting and recording the outcome of experiments and field work, the development of questionnaires and conducting surveys, using straightforward mathematical modelling or scientific computation; • Conduct literature and database searches; • Continue to update knowledge and develop skills; • Write up results of own research; • Contribute to the production of research reports and publications; • Present information on research progress and outcomes to bodies supervising research, e.g. steering groups, sponsors or members of research groups; • Prepare papers for steering groups and other bodies; • Make use of standard research techniques and methods; • Analyse and interpret the results of own research and generate original ideas based on outcomes. • Write technical reports for EU Grants, attending EU project meetings, coordinate tasks and sub-tasks in EU and UK grants. Update group web pages. • Write weekly reports in research progress to the Director. 	
Teaching and Learning Support	10%
<ul style="list-style-type: none"> • May assist in the supervision of student projects; • Provide limited supervision/instruction to classes. 	
Liaison and networking	15%
<ul style="list-style-type: none"> • Liaise with colleagues and students on routine matters; • Make internal and external contacts to develop knowledge and understanding and form relationships for future collaboration. 	
Planning and organising	5%
<ul style="list-style-type: none"> • Plan own day-to-day research activity within the framework of the agreed programme; • Co-ordinate own work with that of others to avoid conflict or duplication of effort; 	

<ul style="list-style-type: none"> • Contribute to the planning of research projects. • Organising and updating CGC and NMS web pages. 	
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Location	Cambridge Graphene Centre, 9 JJ Thomson Avenue, Cambridge, CB3 0FA.
Working pattern	Full time.
Hours of Work	Your employment is full time. There are no conditions relating to hours and times of work but you are expected to work such hours and days as are reasonably necessary for the proper performance of your duties. Your times of work should be agreed between you and your head of institution, or his/her nominee.
Length of appointment	Until 30/09/2025.
Limited funding	This post is funded by research grant or contract and, in the event that this funding should cease, the post may be at risk of redundancy. In the first instance, the funding supporting the post is available for until 30/09/25 and the head of department, or his/her nominee, will keep the role holder informed of the funding situation.
Probation period	3 months.
Annual leave	Full time employees are entitled to annual paid leave of 6.6 weeks (or 41 days for those working full time), inclusive of public holidays (pro-rata for part-time staff). The period for calculating entitlement to holiday leave in any particular year is the academic year i.e. 1 October to 30 September.
Pension eligibility	You will automatically become a member of the Universities Superannuation Scheme (USS) on commencement of employment. Please note that it is not possible to opt out of the scheme until you have received certain specified information about the pension scheme and this will be sent to you shortly after you have been paid for the first time. Pension scheme details are available on our web pages at: http://www.pensions.admin.cam.ac.uk/ . Information about the legal requirement for the University to automatically enrol its eligible jobholders into a qualifying workplace pension scheme is available on our web pages at: http://www.pensions.admin.cam.ac.uk/auto-enrolment-workplace-pensions .
Retirement age	The University does not operate a retirement age for research staff. Further details are available in the University Retirement Policy on our web pages at http://www.hr.admin.cam.ac.uk/policies-procedures/retirement-policy/statement-policy .

Person Profile

This section details the knowledge, skills and experience we require for the role.

Education & qualifications	The successful candidate will hold a Bachelor or master's degree in Applied Physics, Material Science, Chemistry, Nanotechnology or Electrical Engineering.
Specialist knowledge & skills	Relevant experience in photonics, optoelectronics in graphene and related materials, physics of low dimensional systems, plasmonics, near-field optics, CMOS technology and nanofabrication including, e-beam lithography and laser writing, on-chip optical and electrical characterizations, pump-probe and fast electro-optical measurements. Preference will be given to candidates with experience in silicon photonics, fabrication and optoelectronic characterization of graphene, related layered materials or other nanoscale photonic devices. Experience in handling collaborations within EU projects, including reporting and attendance to project meetings is desirable.
Interpersonal & communication skills	The candidate will also have the ability to continually update knowledge and develop skills and engage in continuous professional development. They'll also have experience of managing own workload.
Relevant experience	The role holder would possess sufficient breadth or depth of knowledge in the discipline and of research methods and techniques to work within own area.

Terms and Conditions

Pre-employment Check Requirements

We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. If you do not have the right to work in the UK already, any offer of employment we make to you will be conditional upon you gaining it. If you need further information, you may find the Right to Work page within the 'Applying for a job' section of the University's Job Opportunities pages helpful (please see <http://www.jobs.cam.ac.uk/right/have/>).

Application Process

To submit an application for this vacancy, please click on the link in the 'Apply online' section of the advert published on the University's Job Opportunities pages. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Please ensure that you upload your Curriculum Vitae (CV) and a covering letter in the Upload section of the online application. If you upload any additional documents which have not been requested, we will not be able to consider these as part of your application.

If you have any questions about this vacancy, please contact Professor Andrea C Ferrari (acf26@cam.ac.uk). If you have any questions about the application process, please contact Alina Pupynina, the Cambridge Graphene Centre Administrator (admin@graphene.cam.ac.uk)

Anticipated date for interview: as soon as possible after the closing date with the exact date and time to be confirmed.

General Information

The University of Cambridge

The University of Cambridge is one of the world's oldest and most successful Universities, with an outstanding reputation for academic achievement and research. It was ranked first in the 2011 QS World University Rankings and its graduates have won more Nobel Prizes than any other university in the world. The University comprises more than 150 departments, faculties, schools and other institutions, plus a central administration and 31 independent and autonomous colleges.

The University and the Colleges are linked in a complex historical relationship. The Colleges are self-governing, separate legal entities which appoint their own staff. They admit students, provide student accommodation and deliver small group teaching (supervisions). The University awards degrees and its faculties and departments provide lectures and seminars for students, determine the syllabi for teaching and conduct research.

There is much more information about the University at <http://www.cam.ac.uk/univ/works/index.html> which we hope you will find helpful.

Department of Engineering

The Department of Engineering is the largest department in the University of Cambridge, representing approximately 10% of the University's activities by the majority of common metrics, and is one of Europe's largest integrated engineering departments. It achieves the highest standards in both research and teaching. Its international reputation attracts the best students, academics, sponsors and partners from around the world.

The Department seeks to benefit society by creating world-leading engineering knowledge that fosters sustainability, prosperity and resilience. We share this knowledge and transfer it to industry through publication, teaching, collaboration, licensing and entrepreneurship. By integrating engineering disciplines in one department, we can address major challenges and develop complete solutions, serving as an international hub for engineering excellence.

Cambridge Graphene Centre

The mission of the Cambridge Graphene Centre (www.graphene.cam.ac.uk) is to investigate the science and technology of graphene and related materials. This engineering innovation centre allows our partners to meet, and effectively establish joint industrial-academic activities to promote innovative and adventurous research with an emphasis on applications.

The facilities and equipment have been selected to promote alignment with industry, by filling two main vacuums. The first is the lack of intermediate scale printing and processing systems where the industrial upscale and optimization of inks based on graphene and related materials can be tested and optimized. The second vacuum stems from the challenge posed by the unique properties of graphene: the centre facilities aim to fully cover those properties necessary to achieve the goal of "graphene-augmented" smart integrated devices on flexible/transparent substrates, with the necessary energy storage capability to work autonomously and wireless connected.

The CGC also hosts the EPSRC Centre for Doctoral Training (CDT) in 2D Materials of Tomorrow, in collaboration with the University of Manchester, the Layered Materials Research Foundry (LMRF) in collaboration with the University of Southampton, and the Quantum and Advanced Materials technologies for a Sustainable Society (QAMSS) Strategic Research Initiative (SRI). The CDT works closely with industry to ensure that successful students are properly equipped to follow careers in both industry and academia

The Cambridge Graphene Centre is based on the West Cambridge Site and headed by Professor Andrea Ferrari. It provides a central focus for graphene research in Cambridge.

What the University can offer you

One of our core values at the University of Cambridge is to recognise and reward our staff as our greatest asset. We realise that it's our people who have built our outstanding reputation and that we will only maintain our leading position in the academic world by continuing to attract and retain talented and motivated people. If you choose to come and work with us, you will find that we offer:

- **Excellent benefits** – You will be eligible for a wide range of competitive benefits and services, including numerous discounts on shopping, health care, financial services and public transport. We also offer defined benefits pension schemes and tax-efficient bicycle, car lease and charity-giving schemes.

We will help you balance your home and work life by providing you with generous annual leave entitlement and procedures for requesting a career break or flexible working arrangements if you need them. You will also have access to a range of well-being support services, including in-house Occupational Health and Counselling services. If you have childcare responsibilities, you may also benefit from the enhanced maternity/adoption pay, two nurseries and a holiday play scheme that we provide.

We are keen to welcome new employees from other parts of the UK and other countries to Cambridge. If you will be relocating to Cambridge on a centrally funded appointment of two years or more, you may be eligible for our relocation expenses scheme. The University Accommodation Service will also be available to help you find suitable rented accommodation and to provide advice on renting arrangements and local facilities, if required. In addition, certain academic and

academic-related appointments are eligible for the Shared Equity Scheme which offers financial assistance with the purchase of living accommodation. You may find the pages at www.internationalstaff.ac.uk helpful in planning a relocation.

- **A welcoming and inclusive environment** - We will help you settle into your new role and working environment through a central University induction event, local induction activities and our online induction package. Where appropriate to your role, you will have a probation period to provide a supportive framework for reviewing your progress and discussing your training and development needs.

If you are relocating to Cambridge, you and your family will be welcome to attend the Newcomers and Visiting Scholars Group, which provides an opportunity to find out more about Cambridge and meet other people new to the area.

- **Extensive development opportunities** - The encouragement of career development for staff is one of the University's core values. We put this into practice through various services and initiatives, including:
 - A wide-range of training courses and online learning packages.
 - The Staff Review and Development (SRD) Scheme, which is designed to enhance work effectiveness and facilitate career development post-probation.
 - Leave for career and personal development, including long-term study leave for assistant staff and sabbatical leave for academic staff.
 - The CareerStart@Cam programme, which supports assistant staff roles without higher education qualifications to develop their skills, experience and qualifications. Assistant staff may also apply for financial assistance for study which results in a qualification.
 - Reduced staff fees for University of Cambridge graduate courses.
 - The opportunity to attend lectures and seminars held by University departments and institutions.
 - Policies and processes dedicated to the career development of researchers and the implementation of the principles of the Concordat, which have led to the University being recognised with an HR Excellence in Research Award by the European Commission.

You can find further details of the benefits, services and opportunities we offer can be found in our CAMBens Employee Benefits web pages at <http://www.admin.cam.ac.uk/offices/hr/staff/benefits/>. A range of information about living and working in Cambridge is also available to you within the University's web pages at <http://www.jobs.cam.ac.uk/> and <http://www.admin.cam.ac.uk/offices/hr/staff/>.

Equality of Opportunity at the University

We are committed to a proactive approach to equality, which includes supporting and encouraging all under-represented groups, promoting an inclusive culture and valuing diversity. We make selection decisions based on personal merit and an objective assessment against the criteria required for the post. We do not treat job applicants or members of staff less favourably than one another on the grounds of sex (including gender reassignment), marital or parental status, race, ethnic or national origin, colour, disability (including HIV status), sexual orientation, religion, age or socio-economic factors.

We have various diversity networks to help us progress equality; these include the Women's Staff Network, the Disabled Staff Network, the Black and Minority Ethnic Staff Network and the Lesbian, Gay, Bisexual and Transgender Staff Network. In addition, we were ranked in the top 100 employers for lesbian, gay and bisexual

(LGB) staff in Stonewall's Workplace Equality Index 2013 and we hold an Athena SWAN silver award at organisation level for promoting women in Science, Technology, Engineering and Medicine.

The Department is committed to promoting gender equality as part of a landscape of encouraging diversity, tolerance and a culture of mutual support. The dedicated Diversity Committee oversees equality, diversity and inclusion related activities in the Department, and holds regular events to promote Engineering to under-represented groups. The Department was first granted an Athena SWAN Silver Award in 2017, which was renewed in September 2020 to recognise the Department's ongoing commitment to advancing the careers of women in STEMM. The Department of Engineering continues to make excellent progress towards achieving gender balance amongst its staff and students. More information on the Athena SWAN Charter can be found [here](#).

Information if you have a Disability

The University welcomes applications from individuals with disabilities and we are committed to ensuring fair treatment throughout the recruitment process. We will make adjustments to enable applicants to compete to the best of their ability wherever it is reasonable to do so, and, if successful, to assist them during their employment. Information for disabled applicants is available at <http://www.admin.cam.ac.uk/offices/hr/staff/disabled/>.

We encourage you to declare any disability that you may have, and any reasonable adjustments that you may require, in the section provided for this purpose in the application form. This will enable us to accommodate your needs throughout the process as required. However, applicants and employees may declare a disability at any time.

If you prefer to discuss any special arrangements connected with a disability, please contact, Alina Pupynina, the Graphene Centre Administrator, who is responsible for recruitment to this position, by email on admin@graphene.cam.ac.uk . Alternatively, you may contact the HR Business Manager responsible for the department you are applying to via hrenquiries@admin.cam.ac.uk.