

NEWCASTLE UNIVERSITY

CROSS DISCIPLINARY RESEARCH ASSOCIATE IN NANO ELECTRONICS AND NEUROSCIENCE

Further Particulars

I

Grade F: £26 536-£34 624

This is an opportunity for a high quality researcher with a good track record to undertake feasibility studies for highly adventurous research across the boundary of nano science and technology and medical sciences. It is an excellent opportunity to play a central role in the development of a larger cross disciplinary research activity where further external funding will be sought and for the translation of university research into the commercial sector.

The Nano Materials and Electronics Group is engaged in a range of device and process engineering challenges and is active in developing novel materials and devices, together with new electrical and material characterisation techniques. The Institute of Neuroscience (ION) is one of the UK's largest neuroscience groupings with core strengths in systems neuroscience, in vivo imaging/electrophysiology and a neurotechnology initiative.

You will have a Ph.D or relevant practical experience in some aspect of nanoelectronics or neuroscience. Preference will be given to candidates having previous cross disciplinary experience, either in terms of research projects or having changed disciplines following a first degree. Career development opportunities will include taking responsibility for driving forward feasibility studies, motivating and engaging other researchers to complete feasibility studies. This will require you to have effective communication and interpersonal skills and be pro-active. You must be thorough and be able to demonstrate innovative approaches to research. The position is available immediately.

The post is available initially for 2 years with prospects for an extension or permanent position thereafter.

The closing date for applications will be 1 March and interviews will be held later in March. For further details and information on how to apply, please visit our web site at www.ncl.ac.uk/vacancies or send your CV/application to Professor A O'Neill, anthony.oneill@ncl.ac.uk, EECE, Merz Court, Newcastle upon Tyne, NE1 7RU

Job title	RA
School	EECE
Section / Group / Centre	Nano Materials and Electronics
Grade	RTE Grade F
Salary scale points	27-36
Responsible to	Prof A O'Neill
Responsible for	Feasibility studies to establish cross disciplinary research between nano science and technology and medical sciences
Main purpose of job	To complete feasibility studies on highly adventurous research, aiming to attract larger follow-on support; to consolidate cross-disciplinary culture.
Main duties and responsibilities	<p>Feasibility studies include:</p> <ul style="list-style-type: none"> • literature review; • simulation / experimental work to demonstrate proof of concept; • visits to key stakeholders; • IP protection; • identifying research team needs for a longer larger project. <p>The RA appointed will:</p> <ul style="list-style-type: none"> • carry out certain parts of the feasibility study and liaise with other researchers to complete study where necessary; • report progress on the feasibility study at regular cross-faculty meetings; • be pro-active in driving the feasibility study.
Comments or other relevant information	<p>The RA will be expected to:</p> <ul style="list-style-type: none"> • have previous research experience in nano science / technology and / or neuroscience complementary to other RAs working on this project; • have excellent communication skills; • be strongly motivated in order to drive the feasibility studies; • motivate other researchers to get involved.

III

	ESSENTIAL	DESIRABLE	HOW MEASURED*
EDUCATION AND TRAINING <i>(academic and vocational)</i>	<p>1. PhD degree in Science/ Engineering Or Evidence of equivalent research experience gained in industry</p> <p>2. Complementary to other RA's on this project</p>	<p>PhD in nanoelectronics or neuroscience</p> <p>Cross disciplinary qualifications (e.g. 1st degree in electronics and 2nd degree in neuroscience)</p>	1, 5
EXPERIENCE AND ACHIEVEMENTS <i>(paid/unpaid)</i>	<p>Must complement other expertise in the team and include at least one of:</p> <p>i. Electrical / material characterisation</p> <p>ii. Clean room fabrication</p> <p>iii. Device engineering</p> <p>iv. Circuit design</p>	<p>1. Additional items on the "essential" list</p> <p>2. Publications in high quality journals</p> <p>3. Presentations at international conferences</p>	1, 2, 5
SKILLS, ABILITIES AND PERSONAL QUALITIES	<p>1. Good communication skills (written, spoken, listening, presenting)</p> <p>2. Interpersonal skills</p> <p>3. Pro-active</p> <p>4. Thorough</p> <p>5. Innovative</p>	<p>1. Management / responsibility</p> <p>2. Scoping research ideas</p>	1,2,3
OTHER RELEVANT FACTORS <i>(eg able to work rota system/ driving licence/car owner)</i>			

IV

Newcastle is a large civic university situated on a central site in the city, with more than 18 000 students and 4 500 staff. The University can trace its origins back to 1834, making it the fifth oldest university in the country. It has one of the broadest spreads of subjects of any British University and is organised with three Faculties: Science, Agriculture and Engineering, Humanities and Social Sciences, and Medical Sciences.

V

The Nano Materials and Electronics research group is part of the School of Electrical, Electronic and Computer Engineering. There has been continuous funding for more than 20 years from EPSRC, EU and industry for nanoelectronics fabrication,

characterisation and modelling studies. We currently hold prestigious EPSRC platform grants for both strained silicon and silicon carbide technologies. Other research includes ferroelectrics, nanowires and nm scale characterisation. We are part of the EU network Nanosil concerning nanoelectronics and have many ongoing research collaborations with universities and companies in the UK and abroad.

Newcastle have class 100 clean rooms handling wafers up to 200 mm housing a cluster tool for atomic layer deposition (ALD) and sputter deposition. This provides a rare capability to deposit either nm scale films using ALD or thicker layers using the sputter chamber within the same tool and so without breaking vacuum. There is an RTP system for oxidation and annealing and a chemical station for etching. A second clean room can process SiC wafers. INEX is a multi-material fabrication facility on campus with 400 m² of class 100 cleanroom for front-end processing and 150 m² of class 10,000 cleanroom with local class 100 hoods for back-end processing, packaging, test and characterisation. Climate controlled characterisation facilities house many unique tools, such as a combined AFM and UV Raman system, which has demonstrated nm scale strain measurements, together with conductive AFM. Other in-house material characterisation includes spectroscopic ellipsometry (thickness, dielectric permittivity), XRD (crystalline properties) and XPS (stoichiometry, contamination). Electrical characterisation includes 4 probe stations for I-V and C-V measurements, high frequency measurements to 67 GHz, low and high frequency noise measurements over a range of temperatures and thermal stages for low and high temperature measurement.

The Institute of Neuroscience (ION) is one of the UK's largest neuroscience groupings of over 90 faculty members with core strengths in systems neuroscience, *in vivo* imaging/electrophysiology and a neurotechnology initiative established with seed-funding from the Centre for Excellence in Life Sciences (part of the North East RDA). Resources include facilities for human ECoG and EEG recording, transcranial magnetic stimulation, a purpose-built primate fMRI scanner and considerable experience in a range of *in vivo* and *in vitro* electrophysiological techniques. Animal experiments benefit from the Centre for Comparative Biology, a leading facility directed by a world expert in 3Rs (Prof Flecknell) with experienced staff and a fully-equipped surgical theatre suite.

Within the ION, the Motor Control Laboratory has a strong cross-disciplinary track record. For example, funding from the MRC IDBA award 'Medicine and Nanotechnology' was used to initiate collaboration with MEMS engineers to design a recording electrode with novel mechanical properties optimised for long-term implantation in the brain. This electrode is now performing well in *in vivo* testing and patent protection has been sought. In addition, collaboration with electrical engineers is yielding new technologies for neuroscience applications including a high-bandwidth wireless telemetry system for electromyogram recordings (funded by the National Centre for 3Rs which supports refinements to *in vivo* techniques) and autonomous electronic implants for neural recording and stimulation in freely-behaving animals (Neurochips). Other interdisciplinary interests include developing novel analysis methods for neural data which are disseminated via the UK Spike Train Analysis Network (www.spiketrain.org). This EPSRC-funded network brings together mathematicians, statisticians, computer scientists and neuroscientists to innovate new analysis techniques.

The University uses a web based, e-recruitment system, which allows you to apply online. If you are unable to use this system, please contact the relevant HR team at the contacts provided at the end of this document.

Candidates are advised that following the introduction of the Employment Equality (Age) Regulations 2006, you are no longer obliged to provide your date of birth on your CV.

The University normally takes up references for shortlisted candidates prior to interviews being held, and may sometimes take up references as a part of the shortlisting process. If you do not wish your references to be approached prior to being invited for interview, or to any job offer being made, please indicate this in your application – there is a specific question in the section on references.

All communications will normally be by email, so you should check your inbox regularly. The e-recruitment system will automatically acknowledge your application. Please do not respond to automatic, system generated emails as these are not monitored. A list of HR contacts is provided at the end of this document.

Shortlisting for this position will take place on **[insert shortlisting date]**, with a view to holding interviews on **[insert interview date]**.

All applications will be considered, and you will receive notification of the outcome of your application. If you are successful, you will receive a formal written offer of employment from the Human Resources Section. Please note that only the Human Resources Section or the Registrar or Vice-Chancellor have authority to make offers of employment.

The appointment will be subject to the relevant conditions of service, which will be made available to candidates invited to interview. In most cases, these will also be available on the University website. Copies may be obtained from the Human Resources Section.

Pre Employment Health Assessment [OPTIONAL PARAGRAPH]

The successful candidate will be required to undergo a pre employment medical screening. This will involve completing 1 or more medical questionnaires which will be considered by the Occupational Health Department. In the majority of cases medical clearance will be decided on the basis of the questionnaire, although depending on the nature of the work to be undertaken or because of a candidate's medical history they may be required to attend for a medical examination before clearance is confirmed.

Salaries

The University is committed to the principles of fairness and equality in all aspects of employment, including reward and recognition. The University policy is that new members of staff will normally be appointed up to the second or third points on the main salary scale. Appointments may be made further up the scale where it is deemed appropriate.

Pay progression is normally by the receipt of one annual increment up to the maximum point on the main salary scale for the grade. There is an annual review of salaries for all staff. Additional increments, and progression into the discretionary range beyond the maximum point on the main scale, may be awarded to members of staff demonstrating exceptional levels of contribution or performance.

The pay scales themselves are also reviewed annually, through a process of national bargaining.

[Include this section for academic/teaching appointments only.]

The Newcastle University Certificate in Advanced Studies in Academic Practice

(CASAP) is accredited by the Higher Education Academy and meets the national professional standards for university teachers. The programme aims to support staff in undertaking their roles as members of the academic community. The main focus is on learning, teaching and assessing students. Student support, research supervision and module design are important elements. Participants have access to a Faculty Programme Liaison Officer who will guide them through the course. There is flexibility in the assessment components, which incorporate participants' normal work tasks. The course is part-time, practice-based and can be taken over one or two years – the total contact-time is equivalent to two weeks.

The first module runs for around eight days in September and is repeated in January. This module, or exemption from it, is a requirement for staff on probation. It must be completed by 22 months from starting a relevant post at Newcastle, which should give three possible dates. When considering confirmation of appointment Probation Committee takes the performance of staff on the module into account. Staff who have received equivalent training elsewhere may seek an exemption from the course. Alternatively credit for prior learning (APL) may be available for 100% of module 1. Schools will take into account course attendance in determining the workload of newly appointed staff. This module provides the Newcastle Teaching Award.

The second module is strongly participant-driven and is optional. In any area of academic work, participants will need to bring a proposal that they can carry out, individually or in a group, within twelve months. Alongside other support, we make modest funding available. This module starts in October and February and provides the full CASAP Certificate and the Fellowship of the HE Academy.

We provide other options for part time teachers.

For further details on the programme and APL and to apply to join or for exemption please contact CASAP@newcastle.ac.uk.

Equal Opportunities Policy Statement

Newcastle University is committed to securing equality of opportunity in employment and to the creation of an environment in which individuals are selected, trained, promoted, appraised and otherwise treated on the sole basis of their relevant merits and abilities. For this purpose all applicants will be asked to answer Equal Opportunities monitoring questions as part of the recruitment and appointment process.

All new employees are provided with a copy of the Equal Opportunities Policy on appointment. Further copies may be obtained from the Human Resources Section.

Disclosing a disability

There are good reasons to let the University know that you have a disability. It would help us be better prepared to explore with you the reasonable adjustments in the workplace that could help you work more safely and/or efficiently. It would also give you legal protection if you felt you had been treated unfairly at work because you are disabled. If the University does not know, it cannot help you.

More generally, disclosing will ensure that the University's monitoring data is accurate and will provide a genuine reflection of the numbers of applicants and staff who are disabled. This way we can make sure that the appropriate resources and training are in place. The University will be better placed to make good decisions in its forward planning if the data it is using is accurate.

The Disability Discrimination Act 1995 defines disability as:

'A physical or mental impairment which has a substantial and long-term adverse affect on a person's ability to carry out normal day to day activities.'

When deciding if you come within the definition, think about the effect of your impairment without treatment or medication (except for eyesight that can be corrected with glasses or contact lenses). Long term means for at least 12 months.

Recent amendments have included the following additional definitions:

- If you have been diagnosed as having cancer, HIV infection or multiple sclerosis you will automatically be considered as disabled.
- If you are registered blind or partially sighted or certified as blind or partially sighted by a consultant ophthalmologist, you will automatically be considered as disabled.

You can get additional information about disability from the Equality and Human Rights Commission. Web site <http://www.equalityhumanrights.com> or telephone 08457 622 633

Disability related issues with applying or attending for interview

If you are not able to apply online, the relevant forms and job details are available in a range of different formats, eg, tape, Braille, or in large print. To request a different format, please contact the Human Resources Section at the contacts provided at the end of this document.

If you are invited for interview, you will be asked to describe your disability and to indicate whether any special arrangements or adjustments will be needed to ensure that you are not placed at a disadvantage because of your disability. If you would require us to provide assistance such as a British Sign Language/English interpreter, or a supportive person, that would take some time to organize, please let the Human Resources Section know now. Similarly, not all our interview locations are wheelchair accessible, so it would be helpful if you could let the Human Resources Section know in advance if you require this facility.

Criminal Records Bureau Disclosures

If this position is exempt from the Rehabilitation of Offenders Act 1974 (Exemptions) Order 1975 as amended by Amendment Orders 1986, you will be subject to a criminal check through the Criminal Records Bureau (CRB) before the appointment is confirmed. This check will include details of cautions, reprimands or final warnings, as well as convictions. Applicants are encouraged to declare as soon as possible, details of any criminal convictions, cautions or reprimands and final warnings and any other information that may have a bearing on their suitability for the post. Please note that only relevant convictions and other information will be taken into account so disclosure need not necessarily be a bar to obtaining this position.

Faculty of Medical Sciences, Tracey Charlton, +44 (0)191 222 8712.

Faculty of Humanities, Arts & Social Sciences, Deborah Peacock, +44 (0)191 222 5976.

Faculty of Science Agriculture & Engineering, Jenny James, +44 (0)191 222 5222.

Central Services, Judith Burr +44 (0)191 222 6257.

A full list of Human Resources Contacts is available at
<http://www.ncl.ac.uk/hr/contacts/>