Candidate Information

Position:	Research Fellow
School/Department:	School of Mathematics and Physics
Reference:	19/107674
Closing Date:	Wednesday 7 August 2019
Salary:	£33,199 to £39,610 per annum (potential to progress to £43,266 per annum through sustained exceptional contribution).
Anticipated Interview Date:	Thursday 22 August 2019
Duration:	12 months

JOB PURPOSE:

To be an active member of the nanoscale ferroelectrics research team (within the School of Mathematics and Physics in Queen's University Belfast). The position will assume responsibility for the delivery of specific research objectives associated with an ongoing multi-university EPSRC Critical Mass Grant on functionally active domain walls. The primary role is to perform research on conducting domain walls in ferroelectrics, to probe the fundamental physics of transport.

MAJOR DUTIES:

1. Set-up and conduct laboratory experiments to elucidate fundamental aspects of conduction in ferroelectric domain walls. This will include use of scanning probe microscopy (piezoresponse force microscopy [PFM], conducting atomic force microscopy [cAFM] and direct Hall voltage measurements using Kelvin probe force microscopy [KPFM]) to determine carrier types, densities and mobilities. In addition, to explore confinement effects and aspects of spin transport.
2. Carry out analyses, critical evaluations, and interpretations of data using appropriate methodologies, in collaboration with academic staff and other research group team members.
3. Prepare and present regular progress reports on research to members of the research group and to external collaborators.
4. Prepare and present formal talks at national and international conferences to disseminate research progress.
5. Assist grant holder in the preparation of funding proposals and applications to external bodies.
6. Prepare written manuscripts for publication in high-quality peer-reviewed journals.
7. Support PhD student research and MSci research projects on ferroelectric domain walls.
8. Carry out occasional undergraduate supervision/demonstrating/teaching duties at a level to be agreed, but not for more than 6 hours per week during university teaching periods.
9. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.
10. Carry out any other duties designated by a line manager and which fall within the general ambit of the post.

Planning and Organising:

1. Plan own day-to-day activity within the framework of the agreed research programme.
2. Contribute to the planning of research projects, reports and publications etc usually 1-6 months in advance.
3. Coordinate and liaise with other members of the research group over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise with research colleagues and support staff on routine matters.
2. Make internal and external contacts to develop knowledge and understanding and form relationships for future collaboration.
3. Attend and contribute to relevant meetings, internally, nationally and internationally.
4. Contribute to the School's outreach programme, by establishing links with local community groups, industries etc.

ESSENTIAL CRITERIA:

1. Degree or equivalent in physics, materials science or other cognate area of relevance to the post.
2. Have obtained, or be about to obtain, a PhD in a relevant area.
3. At least 3 years relevant research experience.
4. Expertise and experience in at least one of the following:
   - scanning probe microscopy of ferroelectric / piezoelectric materials;
   - investigation of ferroic domains or domain walls;
   - ferroelectrics;
   - functional oxides.
5. Ability to contribute to management and administrative processes relating to the research programme.
6. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
7. Ability to communicate clearly and effectively.
8. Demonstrable intellectual ability.

DESIRABLE CRITERIA:

1. PhD specifically involving one or more of the following: nanoscale ferroelectrics, transport measurement, domain walls, scanning probe microscopy.
2. Experience/expertise in a number of the relevant areas as outlined in essential criteria 4
3. Significant experience in and knowledge of nanoscale aspects of ferroelectric materials or nanoscale characterisation techniques relevant to ferroelectrics.
4. Significant experience in performing transport measurements at the nanoscale.
5. Strong dissemination / publication record of high-quality research, commensurate with level of experience.
6. Contribute to the School's outreach programme by links with industry, community groups etc
7. Ability to prepare and give well-timed, coherent and insightful presentations.
8. Ability to work both as an individual and as part of a team.
9. Willingness to travel both nationally and internationally as required by the role.