Candidate Information

Position:	Research Fellow in MEMS Oscillators
School/Department:	School of Electronics, Electrical Engineering and Computer Science
Reference:	21/108630
Closing Date:	Monday 1 March 2021
Salary:	£33,797 per annum
Anticipated Interview Date:	9 March 2021
Duration:	22 months or until 1 June 2023 (whichever is soonest)

JOB PURPOSE:

To design, simulate, fabricate and test high quality factor MEMS oscillators for in-situ material characterization at high temperature. This research funded by the Engineering and Physical Sciences Research Council (EPSRC) under “New Horizon” research scheme aims to develop a new oscillator based sensor chip capable of characterizing mechanical properties of thin films during deposition at high temperature. This is a unique opportunity to build the next generation of in process thin film characterization sensors and work at one of the leading institutions in the United Kingdom, Queen’s University Belfast. The successful candidate will work at Queen’s Advanced MicroEngineering Centre (QAMEC) within the School of Electronics, Electrical Engineering and Computer Science (EEECS), contributing to world leading research outputs and completely new research initiatives in the broader area of MEMS sensors.

MAJOR DUTIES:

1. Design, simulate, fabricate and characterize a novel silicon oscilaltor geometry.
2. Use finite element analysis software (COMSOL) to analysize performance of different oscillator designs before fabrication.
3. Fabricate MEMS oscillator chips at state of the art micro fabrication facility (QAMEC).
4. Evaluate the performance of the proposed chips using existing measurement system.
5. Upgrade oscillator measurement setup to conduct high temperature and in-situ material characterization.
6. Present regular progress reports on research to members of the research group or to external audiences to disseminate research findings.
7. Prepare in collaboration with the supervisor the material for high-quality publications in national and international journals and presentations at international conferences.
8. Carry out routine administrative tasks associated with the research project/s to ensure that the project is completed on time and within budget. These might include the organising of the project meetings and documentation, risk assessment of research activities.
9. Carry out occasional undergraduate supervision, demonstrating or lecturing duties within the post holder’s area of expertise and under the guidance of a member of academic staff.
10. Submit research grants with lead supervisor to different funding agencies.

Planning and Organising:

1. Plan for the use of research resources, laboratories and workshops.
2. Plan own day-to day activity within the framework of the agreed research programme.
3. Plan and meet deadlines for journal publications, prepare presentations and papers for conferences.
4. 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 on a regular basis with colleagues and students within the School of EEECS and faculties in QUB to build research collaborations.
2. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
3. Join external networks to share information and ideas.

ESSENTIAL CRITERIA:

1. Hold, or about to obtain, a PhD in Engineering or Physics.
2. Have 3 years' relevant research experience with a demonstrable background in semi-conductor process fabrication and sensor/device characterization.
3. Previous experience in MEMS simulation (COMSOL) and 3D design software.
4. Demonstrable experience in the use of programming skills including LabView or Python.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc.
7. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
8. Good communication skills, report writing skills and experience of delivering presentations
9. Ability to build contacts and participate in internal and external networks.
10. Demonstrable intellectual ability.
11. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. Practical experience in implementation and testing of MEMS oscillators.
2. Demonstrable experience and knowledge in modelling of oscillators.
3. Have a strong track record of publication in the proceedings of international conferences and journals (e.g IEEE, RSC, ACS) commensurate with experience.
4. Demonstrable experience in meeting deadlines in producing technical documents.
5. Demonstrable experience in presenting at conferences, workshops, seminars, tutorials etc.