

Candidate Information

Position:	Research Fellow
School/Department:	Centre for Light-Matter Interactions (CLMI)
Reference:	22/110535
Closing Date:	Monday 16 January 2023
Salary:	£35,333 per annum
Anticipated Interview Date:	Monday 30th January 2023
Duration:	30 months

JOB PURPOSE:

To be a highly productive, ambitious and collaborative member of “Ga2O3: Understanding Growth, Interfaces and Defects to enable next generation Electronics” (USI-195, “GUIDE”) research project assisting in the development of research proposals and the planning and delivery of the research activity. Specifically, the successful candidate will model the interfaces and defects of the wide-band-gap semiconductor Ga2O3 from first principles.

The post is a critical role, and as such, successful applicants will have responsibilities in independent research, planning, collaborations and outreach.

MAJOR DUTIES:

1. Undertake research under supervision within a specific research project or as a member of a research team.
2. Design, develop and refine research using a range of modelling approaches, including density functional theory and semiconductor transport theory.
3. Carry out analyses, critical evaluations, and interpretations of modelling data and the literature using methodologies and other techniques appropriate to area of research, including scripting in Python or equivalent computer languages.
4. Produce high quality research outputs consistent with project aims and commensurate with career stage. This will include collaborating and co-authoring with the PI and the other members of the “GUIDE” consortium.
5. In consultation with the project team, promote research milestones and outputs at national and international conferences.
6. Assist grant holder in the preparation of funding proposals and applications to external bodies.
7. Carry out occasional educational supervision, demonstrating or lecturing duties within the post holder’s area of expertise and under the direct guidance of a member of academic staff.
8. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain a PhD in Physics, Chemistry, Material Science or closely related disciplines. (NB ‘About to obtain’ is normally defined as within 3 months of application date.)
2. At least 3 years of relevant research experience to include:
 - Familiarity with the basic physics of semiconductors and semiconductor devices.
 - A proven track record of using first principles modelling of either interface or defect properties.
 - Experience performing original research, demonstrated through a record of original publications in top-tier journals and conference papers and presentations commensurate with stage of career.
3. Ability to contribute to broader management and administrative processes.
4. Contribute to the School’s outreach programme by links with industry, community groups etc.
5. Practical problem solving skills, independence of thought and initiative.
6. Demonstrable ability to assess and organise resources.
7. Proven experience in using high performance computing facilities to run numerical simulations.
8. Ability to communicate complex information in English effectively in oral and written format.

9. Ability to build relationships to develop internal and external networks.
10. Commitment to continuous professional development
11. Interest in travelling among the three institutions of this US-Ireland Research & Development Partnership.

DESIRABLE CRITERIA:

1. A proven track record of using first principles modelling of both interface and defect properties.
2. A proven track record of research in close connection with the experimental partners.
3. Demonstrated working experience (i.e., beyond standard university courses) of semiconductor transport theory.
4. Demonstrated working experience of semiconductor device modelling or technology computer-aided design (TCAD).
5. Capability to use scripting languages (e.g., Python) to analyse modelling results.
6. Programming skills (e.g. for automating calculations through workflows).
7. Provide evidence of independence and the ability to manage a personal network of collaborations.