Candidate Information

Position:	Research Fellow
School/Department:	School of Mathematics and Physics
Reference:	26/113716
Closing Date:	Monday 16 November 2026
Salary:	£42,972 - £45,576 per annum
Anticipated Interview Date:	Monday 30 November 2026
Duration:	Fixed term for 3 years or until 28 February 2030, whichever is soonest

JOB PURPOSE:

To be an active member of the research project/team assisting in the planning and delivery of the research activity with the EPSRC Grant, Laser-Induced Chiral Photolysis. Specifically, the candidate will use experiments and simulations to create synthetic chiral light and optimise its ability to selectively ionize and fragment chiral molecules of a particular handedness. In addition, this role will contribute to School administration/outreach activity and assist in supervision of Masters and PhD students.

MAJOR DUTIES:

Teaching:

1. Undertake research activities with the Centre for Light-Matter Interactions with emphasis on:
   -Setting up computer-controlled optics to generate, control and overlap femtosecond laser pulses of different colours.
   -Prepare for and lead experimental campaigns at Queen's and external laser facilities.
   -Analyse experimental data, including use of machine learning for feedback optimisation of the laser experiments.
2. Develop and plan research. Undertake research as a member of a research team and publish in appropriate journals and present work at conferences.
3. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to area of research.
4. Provide guidance to students on own specialist area.
5. Work/collaborate on original research with colleagues in other institutions.
6. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
7. Prepare, often in consultation with supervisor, material for publication in national and international journals and presentations at international conferences.
8. Assist grant holder in the preparation of funding proposals and applications to external bodies.
9. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget. These might include organisation of project meetings and documentation, financial control, risk assessment of research activities.
10. Carry out occasional undergraduate supervision, demonstrating or lecturing duties within the post holder’s area of expertise and under the direct guidance of a member of academic staff.
11. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.
12. Carry out any other duties designated by a line manager and which fall within the general ambit of the post.

ESSENTIAL CRITERIA:

1. Have or be about to obtain* a relevant PhD (*must be obtained within 3 months of commencement of employment).
2. Degree in Physics, Theoretical Physics or related field.
3. Significant experience of multiphoton interactions with molecules, or related experiments.
4. Extensive experience setting up laser optics for experiments.
5. Significant experience analysing data using Matlab, Python or Labview.
6. Ability to contribute to broader management and administrative processes.
7. Ability to supervise Masters and PhD students.

8. Ability to communicate complex information clearly.
9. Ability to build contacts and participate in internal and external networks.
10. High level of analytical ability.
11. Effective interpersonal skills.
12. Engagement in continuous professional development.
13. Ability to assess and organise resources.
14. Ability to work effectively in a team of scientists.
15. Ability to pursue independent research.

DESIRABLE CRITERIA:

1. PhD in Laser-Molecule Interactions.
2. Experience conducting femtosecond pump-probe experiments .
3. Experience implementing Bayesian optimisation methods and/or machine learning algorithms for laser interactions and/or data analysis.
4. Experience in mass spectrometry.
5. Experience using molecular structure codes (e.g. Gaussian) to calculate molecular properties.
6. A record of publications/presentations in scientific journals and conferences.
7. Willingness to contribute to the School’s outreach programme.
8. Knowledge of chiral molecules and their interactions with electromagnetic fields.

ADDITIONAL INFORMATION:

For further enquiries please contact :

Prof. Ian Williams - i.williams@qub.ac.uk