Ultrafast Laser Spectroscopy of Photochemical Dynamics

Fully funded 3.5 year PhD studentships are available to start in September 2025 in the <u>Orr-Ewing</u> research group and the <u>Oliver research group</u> in the School of Chemistry at the University of Bristol.

Photochemical reactions are ubiquitous in the natural world and have numerous applications in science, technology, and medicine. For example, they are central to vision, plant growth, and air quality, and are used in biological imaging, medical sensing, and sustainable synthesis of materials and pharmaceuticals. A molecular-level understanding of these photochemical processes and the influence of their surroundings is needed to address urgent societal challenges such as developing new tools for disease diagnosis, mitigating pollutants in air, improving crop yields, and harnessing solar energy.

The ultrafast laser spectroscopy group at the University of Bristol is part of a large UK consortium supported by UKRI / EPSRC through the Ultrafast Photochemical Dynamics in Complex Environments (UPDICE) Programme Grant. This <u>UPDICE consortium</u> uses state-of-the-art ultrafast laser spectroscopy measurements and quantum dynamical simulations to explore the photochemistry of molecules of biological and atmospheric significance on femtosecond and picosecond timescales. Our focus is on how interactions with a complex environment influence the ultrafast photochemical pathways.

You will join the Bristol group to work on projects contributing to the aims of the UPDICE consortium by applying state-of-the-art ultrafast laser spectroscopy methods. You will collaborate with theoretical and computational chemistry colleagues to interpret the experimental results. The experimental techniques you will use could include: transient absorption and time-resolved spectroscopies; time-resolved fluorescence spectroscopy; 2D infra-red, electronic and electronic-vibrational spectroscopies. Studies of photochemical dynamics will be undertaken in liquid solutions, proteins, and aqueous aerosol droplets.

You will part of a team of postgraduate students and post-doctoral research fellows in the excellently equipped and well-funded <u>Orr-Ewing research group</u> and <u>Oliver research group</u> at the University of Bristol. The School of Chemistry at the University of Bristol was ranked #1 in the UK for Chemistry research in the 2021 UK Research Excellence Framework (REF2021).

You will receive a stipend to cover your living costs at the level set by UKRI: <u>https://www.ukri.org/skills/funding-for-research-training/</u>

Contact Prof Andrew Orr-Ewing FRS (<u>a.orr-ewing@bristol.ac.uk</u>) or Dr. Tom Oliver (<u>tom.oliver@bristol.ac.uk</u>) for further details.

Funding is available for UK applicants and EU citizens with settled status. Applicants from other countries may also be considered.

Candidate Requirements

Applicants must have obtained, or be about to obtain, a First or Upper Second Class UK first degree, or the equivalent qualifications gained outside the UK, in Chemistry or in a related discipline (Chemical Physics or Physics).

How to Apply

Please make an online application for this project at the following page <u>How to apply | Study at</u> <u>Bristol | University of Bristol</u>.

Funding

A full studentship will cover UK tuition fees, a training support fee and a stipend (£19,237p.a. in 2024/25, updated each year) for 3.5 years.

Getting in Contact

We encourage you to make an informal enquiry to Professor Andrew Orr-Ewing (a.orr-ewing@bristol.ac.uk) if you have any queries or would like to discuss project.