

DPhil studentship in Physical Chemistry: Laser Spectroscopy of Aerosol Particles

Title: Broadband Light Scattering Analysis for Single Aerosol Particles

Supervisor: Professor Michael Cotterell

Start date: 1st October 2026

Applications are invited for a **DPhil studentship** in Chemistry available from October 2026, to work under the supervision of **Professor Michael Cotterell** in the Department of Chemistry at the University of Oxford. This studentship is 50% funded by the STFC Ada Lovelace Centre and will be jointly supervised by Dr Andy Ward at the STFC Central Laser Facility and Dr Tyrone Rees at STFC Scientific Computing.

The studentship will cover course fees at a Home rate and provide a stipend of no less than the standard UK Research Council rate (currently set at £20,780 p.a.) for 3.5 years. Please note the eligibility criteria set out by the UKRI at: <https://www.ukri.org/what-we-do/developing-people-and-skills/esrc/funding-for-postgraduate-training-and-development/eligibility-for-studentship-funding/>

The project, sponsored jointly by the Department of Chemistry and the Science and Technology Facilities Council (STFC) Ada Lovelace Centre, will develop new computational analysis tools in combination with laser based optical spectroscopy to probe aerosol particles (solid or liquid particles suspended in air). Project outcomes will improve our understanding of how the evolution of particles during chemical processes affect their optical properties.

Aerosols are solid or liquid particles suspended in air that range from sizes as small as ten nanometres to as large as one hundred micrometres. Interactions between aerosol particles in Earth's atmosphere and sunlight remain one of the largest uncertainties in climate projections. Prof. Cotterell (University of Oxford) and Dr. Ward (STFC Central Laser Facility) work together to characterise the optical properties of single, levitated aerosol particles illuminated by broadband light. Dr. Ward's STFC laboratory provides a national facility that can be used by any UK institution for recording light scattering spectra. Similarly, Prof. Cotterell's group is home to a similar instrument, and they have made strides towards the computational analysis of recorded datasets.

This studentship will build on expertise already established in the Cotterell and Ward groups, supported by colleagues in the STFC Department for Scientific Computing, to develop advanced computational tools for analysing light scattering spectra. This work will enhance the Central Laser Facility's capabilities and deliver software for the wider UK research community, addressing a critical gap in understanding the unique chemistry occurring in aerosols and how these particles affect Earth's climate. The student will engage in training and cohort activities at STFC including presentations of their work at the Ada Lovelace Centre.

Prof. Cotterell can be contacted for further information: michael.cotterell@chem.ox.ac.uk

Candidates with a first-class or strong upper second-class undergraduate Masters degree in Chemistry, Physics, or a related discipline are strongly encouraged to apply. The candidate must have a strong commitment to research and should have demonstrated the ability to independently learn new skills. The successful applicant will be based in the Physical and Theoretical Chemistry Laboratory (PTCL), Oxford. The student will spend ~50% of their time

at the nearby STFC Rutherford Appleton Laboratory, with up to £2000 per annum available to cover costs associated with commuting to the STFC.

Candidates should submit a formal application for DPhil in Chemistry via the Oxford online application system:

<https://www.ox.ac.uk/admissions/graduate/application-guide>

<https://www.ox.ac.uk/admissions/graduate/courses/dphil-chemistry>

Please quote **MC/Chem/2026** under 'Departmental Studentship Applications'.

Application deadline: **12.00 noon UK time on Thursday 8th January 2026.**

Queries relating to the application and admission process should be directed to:
graduate.admissions@chem.ox.ac.uk; tel.: +44 (0) 1865 272569.

The Department of Chemistry holds the Athena SWAN Silver Award. The Cotterell group foster an inclusive culture, supporting researchers from diverse backgrounds and prioritising equitable opportunities for career development.