

DPhil studentship in Theoretical Chemistry

Title: Quantum tomography of electronic states

Supervisor: Professor Adam Kirrander

Start date: 1st October 2026

Applications are invited for a **DPhil studentship** in the quantum tomography of electronic states, available from October 2026, to work under the supervision of **Professor Adam Kirrander** in the Department of Chemistry at the University of Oxford.

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/>

Research in the Kirrander group explores sophisticated light-matter interactions, *via* theory and simulations, to measure quantum dynamics in atoms and molecules. The project aims to explore new ideas for how quantum tomography, combining multiple measurements and new types of measurements, can help us create a more complete picture of the electron wavefunction. The project relies on a combination of concepts from quantum mechanics, information theory, and cutting-edge experiments, with the goal of improving and challenging current electronic structure theory and develop new types of (ultrafast) imaging methods.

The new tools developed will eventually contribute to better fundamental understanding of how the interplay of nuclear and electronic motions governs photoexcited dynamics, and help us advance towards being able to engineer new molecules with custom properties, allowing innovative systems for energy harvesting or photocatalysis to be designed. Further information about our research can be found on our group web page (<https://kirrander.web.ox.ac.uk>) and Prof. Kirrander's staff page (<https://www.chem.ox.ac.uk/people/adam-kirrander-0>). Prof. Kirrander can be contacted for further information: adam.kirrander@chem.ox.ac.uk

Candidates with a first-class or strong upper second-class undergraduate degree in Chemistry, Physics, or a related discipline such as Mathematics or Computer Science, are encouraged to apply. The candidate is expected to have a strong commitment to research and should have demonstrated the ability to independently learn new skills. Our research is highly collaborative, both within the research group and with our close collaborators in the UK and overseas; positive attitude, team spirit, and willingness to work across subject boundaries and to straddle theory and experiments is helpful. The successful applicant will be based in the Physical and Theoretical Chemistry Laboratory (PTCL), Oxford.

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 **AK/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 and the Kirrander group is dedicated to promoting diversity, equality and inclusion.