

## **PhD Studentship Opportunity in solid state sciences and crystal growth**

The [London Centre for Nanotechnology \(LCN\)](#) at UCL is seeking to appoint a PhD student to work on crystal growth and neutron scattering in advanced, functional materials. The position is based at the [ISIS neutron and muon spallation](#) source in the UCL-run Facility for Advanced Crystals for Emerging Technologies ([FACET](#)) in Harwell, Oxfordshire. It will involve synthesising single crystals of novel materials for technological applications using Europe's first high gas-pressure laser furnace. Neutron scattering studies will be used to investigate the properties of these materials. The work is part of a collective effort at Harwell to produce single crystals for scientific studies at the UK's large facilities (Diamond and ISIS, in particular).

### **Scientific Background**

Single crystals of functional materials form the bedrock of modern devices. Remarkably, most technology is based on crystals of a small subset of materials, for example, silicon, gallium arsenide and strontium titanate. Over the past ten years, there have been considerable efforts to expand the list of materials, driving engineering developments to improve growth methods. The latest technological development in crystal growth involves laser melting and high gas pressure. This allows for higher melting point materials with volatile constituents to be grown, greatly expanding the list of the materials available to study. We were recently awarded funding for Europe's first high gas pressure laser furnace made by [SciDre](#). The project will involve training on this equipment to grow crystals of novel advanced functional materials, followed by neutron diffraction studies to determine their properties.

### **Work programme**

In this project, the student will be trained to use the new laser furnace at FACET and ultimately become responsible for its operation. The student will join our active collaboration projects on several research topics. This includes new materials for spin qubits for quantum computing (UCL), novel laser gain materials for infrared lasers ([ORC](#), Southampton), novel quantum materials for magnetism research (Oxford) and energy materials (ISIS). There is also considerable scope for self-led projects if the student is interested in other fields. The primary characterisation tools will be via neutron diffraction at ISIS neutron source, X-ray scattering at the [Diamond Light Source](#) (DLS) and bulk property measurement.

### **Supervision**

The project will be co-supervised by Prof Robin Perry (UCL) and Dr Travis Williams (ISIS). Additional key individuals providing guidance will be measurement scientists at UCL, ISIS, Oxford and Southampton, depending on the collaboration selection. At FACET, we work with a broad spectrum of physicists, chemists and engineers to grow crystals for basic science. There are opportunities to work with many groups depending on the nature of the project.

### **About the institutions**

The LCN is an internationally leading nanotechnology and nanoscience

research centre located in Bloomsbury in central London. As well as a research department of UCL, it is a joint cross-London research centre partnering with Imperial College London and King's College London. This studentship will be based full-time at the [Harwell research campus](#) in South Oxfordshire, where FACET is based. Harwell is a unique collaboration between government, academia, and industry that is working to accelerate the rate of global innovation. It houses the major UK scientific facilities, including the Rutherford Appleton Laboratory, ISIS, DLS and the Central Laser Facility. It is the UK's largest materials research hub, with over 7500 on-site scientists and engineers. The UCL Bloomsbury campus is 1.5 hours away by train, enabling day visits for UCL-based activities like seminars and departmental teaching.

### **Funding**

The four-year studentship is co-funded by the LCN and ISIS neutron and muon spallation source. The stipend set by EPSRC is £21,237 per annum with a budget for travel for conferences.

### **What we are looking for**

We are looking for students with a strong background in condensed matter physics, solid-state chemistry or materials science. The project involves cross-disciplinary skills, for example, materials synthesis and large facility science and technology development. Training will be provided for all components of the project.

UCL recruits for studentship opportunities on merit, but we are particularly keen to attract applications from groups currently under-represented among our postgraduate research student cohort in physical sciences and engineering.

### **Dates and application process**

The student must be available to start the studentship from 1 September 2025 and qualify as a home student under [UKRI rules](#) to be eligible for funding. Applications will close at 5 pm on 31<sup>st</sup> January. For inform enquiries, please email [robin.perry@ucl.ac.uk](mailto:robin.perry@ucl.ac.uk).

For applications, use the portal <https://www.london-nano.com/form/lcn-phd>. You will be asked for

- A CV;
- A transcript of your undergraduate studies;
- The names of two referees familiar with your academic work.

For shortlisted candidates, the selection process will include an academic interview at UCL.