

Exciting [Faraday Undergraduate Summer Experience \(FUSE\)](#) paid internship opportunities for summer 2026

Studying a STEM degree? Wondering what career to pursue? Interested in finding out more about the battery sector? Keen to spend time with a dynamic community of pioneering battery researchers seeking to find solutions to support a fully electric future?

The Faraday Institution is offering a number of internships, for undergraduate students to spend 8 weeks working on battery related projects.

Four projects are available in Professor Mauro Pasta's group at Oxford:

1)

Project title: Investigating the Effects of Warm Isostatic Pressing on Solid State Cathodes

Project description:

Solid state batteries are a promising next generation battery technology, however, there are several challenges that must be overcome before they can be commercialized. One of these challenges is conductivity and contact retention in the cathode, which leads to low levels of cathode utilization. Typical uniaxial pressing results in high void fractions, leading to cells needing to be cycled at high pressures (circa 80 MPa).

This project will utilize the newly acquired warm isostatic press to form all solid-state composite cathodes. These can then be tested in solid state coin cells to assess cathode utilization and to optimize solid electrode and binder fractions, to allow high volumetric energy density cathodes and low pressure cycling.

Optimal composition composite cathodes will then be tested in pouch cells at low pressures.

Supervisors: Dr. Matthew Burton Aspinall and Professor Mauro Pasta

2)

Project title: Advanced fabrication of lithium argyrodite solid electrolytes

Project description:

Solid state batteries are a promising next generation battery,[1] one reason they fail however is due Lithium argyrodites based on the composition $\text{Li}_6\text{PS}_5\text{X}$ (X = Cl, Br, I) are among the most intensely researched solid electrolyte materials for lithium metal batteries owing to their high ionic conductivities and mechanical softness. However, they are susceptible to penetration by dendrites of lithium metal, which form as lithium is plated on the anode during charging; this eventually causes a short circuit and thus cell failure.

Recent work in Oxford has shown that minimising the size of microstructural flaws such as porosity is critical to avoiding dendrite initiation and growth at the charging current densities envisaged for future applications.

This project will focus on improving the microstructures of lithium argyrodite solid electrolytes by modifying the conventional powder pressing and sintering procedure. In particular, the effect on sintering performance of the green body chemical composition will be explored using techniques such as scanning electron microscopy, focused ion beam tomography, energy dispersive X-ray spectroscopy and electron backscatter diffraction. Depending on the success of this study and the remaining time available, electrochemical measurements to verify the expected improvement in dendrite resistance will be performed,

Supervisors: Dr. Stephen Turrell and Professor Mauro Pasta

3)

Project title: Developing thin film solid electrolyte separators and sulphur composite cathodes for all-solid-state Li-S batteries

Project description:

Solid-state lithium-sulphur (Li-S) batteries are promising next-generation energy storage systems, as replacing liquid electrolytes with solid electrolytes (SEs) can effectively suppress polysulfide shuttling and lithium dendrite growth, thereby enhancing cyclability and energy density. However, commercialisation remains limited by the lack of thin, robust, and scalable SE separators and composite cathodes that combine high conductivities and mechanical integrity.

This project will focus on optimising slurry formulations and the tape-casting process for solid-state Li-S batteries. The slurry compositions for SE separators and composite cathodes will be systematically refined to fabricate thin and uniform films, with the former comprising SE, binder, and solvent, and the latter incorporating active materials, SE, binder, conductive carbon, and solvent. The resulting thin-film separators and electrodes will be integrated into pouch cells to evaluate their electrochemical performance under low stack pressures, demonstrating their potential for practical solid-state Li-S batteries.

Supervisors: Dr. Liwei Dai, Dr. Junsik Kang and Professor Mauro Pasta

4)

Project title: Interlayers to Mitigate Solid Electrolyte Interphase Growth

Project description:

Solid-state batteries (SSBs) with lithium metal negative electrodes have the potential to revolutionise electrified transportation, but their life is currently limited by degradation reactions. The leading solid electrolyte, Li₆PS₅Cl (LiPSCI), is reduced by lithium to form a solid electrolyte interphase (SEI) composed of Li₂S, LiCl and various phosphorus-containing species. This SEI grows over time, consuming active lithium and increasing cell resistance, so strategies to limit SEI growth must be developed.

In this project various insulating interlayers between the lithium and the LiPSCI will be explored to screen the chemical potential across the interface and reduce the SEI growth rate. SEI growth will be probed electrochemically and spectroscopically using a combination of coulometric titration time analysis (CTTA), electrochemical impedance spectroscopy (EIS) and virtual electrode plating X ray photoelectron spectroscopy (VEP-XPS). This work will contribute to the advancement of SSB lifetimes towards commercial targets.

Supervisors: Dr. Ben Jagger and Professor Mauro Pasta

Details for all four projects

Location: Energy Storage Research Centre, University of Oxford

Start date: The internship is a full-time role for 8 weeks – flexible, June – September 2026.

Eligibility:

- Be registered full-time undergraduate student from a UK university.
- Undertake the internship within the years of their undergraduate study (i.e., not in final year or during a subsequent Masters' programme).
- Not have been a FUSE intern in a previous year

Funding:

A salary of £14.21/hour will be provided. The funding is provided by the [Faraday Institution](#).

Additional activities:

During the FUSE internship you will be able to attend Faraday Masterclasses and cohort events which will focus on a variety of topics to further develop your understanding of career opportunities in battery sector. At the end of the programme, you will be invited to to share a poster about your work and prizes will be awarded.

Application:

In order to apply for a Faraday Undergraduate Summer Experience (FUSE) 2026 internship, you need to send your Personal Statement (including an explanation of which project you are applying for and why you would like to embark on this internship opportunity, and some information about your background) and CV to the Project manager, Neil Cadman neil.cadman@materials.ox.ac.uk

Please also complete this [survey](#) so we can keep you informed about future Faraday opportunities, including other FUSE internships that may need additional support with recruitment.

The deadline date for applications is **April 24th 2026**.

Diversity

The Faraday Institution is committed to creating a dynamic and diverse pool of talent for the fields of battery technology and energy storage.

Equality, diversity and inclusion concerns every member of our community at the University of Oxford. The University of Oxford is committed to fostering an inclusive culture which promotes equality, values diversity and maintains a working, learning and social environment in which the rights and dignity of all its staff and students are respected. We recognise that the broad range of experiences that a diverse staff and student body brings strengthens our research and enhances our teaching, and that in order for Oxford to remain a world-leading institution we must continue to provide a diverse, inclusive, fair and open environment that allows everyone to grow and flourish.

For more information, go to our dedicated Diversity and Inclusion webpages

<https://edu.admin.ox.ac.uk/home>