

Exciting [Faraday Undergraduate Summer Experience \(FUSE\)](#) paid internship opportunities for summer 2024.

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 total of 55 internships, for undergraduate students to spend 8-weeks working on battery related projects.

Project title: Investigating the extent of interphase growth in solid-state electrolytes.

Project description:

Currently to fully charge commercial electric vehicles, using state-of-the-art Li-ion batteries, takes ~2 hours yet using a solid-state battery (SSB) these times can be reduced to less than 15 minutes. Despite the improved rate performance promised, SSBs suffer from dendrite growth on charge, leading to shorting of the cell. It is thought that this phenomenon could be indirectly caused by the formation of an undesirable solid electrolyte interphase (SEI). This is formed when the Li-metal anode is placed or deposited on the solid electrolyte. Therefore, methods to understand the growth of SEI layers and their impact on overall SSB performance are pivotal to commercializing SSB technologies.

The purpose of this project is to characterize the SEI formed by the reaction of lithium metal with different commercially viable sulphide-based solid electrolytes, Li_7PS_6 , $\text{Li}_6\text{PS}_5\text{Cl}$, and $\text{Li}_{5.5}\text{PS}_{4.5}\text{Cl}_{1.5}$, and then quantify the effect the SEI has on full cell performance.

Supervisor: Gregory Rees, Bartholomew Payne, Peter Bruce

University: University of Oxford

Location: *In-person, Oxford*

Start date: June – September 2024

Eligibility:

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

Funding:

A salary of £12 / 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 Institution cohort events which will focus on a variety of topics to further develop your understanding of career opportunities in the battery sector. At the end of the programme, you will be invited to share a poster about your work and prizes will be awarded.

Application:

In order to apply for a Faraday Undergraduate Summer Experience (FUSE) 2024 internship, you need to submit a) a CV (maximum 1 page) and (ii) a short personal statement outlining your interest in energy storage (in Microsoft Word or PDF format, 300 words max.) to Dr Gregory Rees (gregory.rees@materials.ox.ac.uk) before 18:00 on 26th April 2024. Interviews will take place on Friday 3rd May with the successful applicant notified before 11th May.

Diversity:

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

[University of Oxford's Equality Policy](#)