

**Investigating Component Materials for Lithium Sulfur Electrodes**

**Project Description**

Li-S batteries are one of the most promising next generation technologies which offer improved energy storage compared to state-of-the-art Li-ion cells. These devices are typically made using a sulfur/carbon composite at the positive electrode to minimise the weight of the cell. However there remains scope to incorporate additional components to catalyse the reactions which occur during operation. In this project you will work alongside researchers in the LiSTAR programme to build high-performance electrodes and examine how these change during cycling using X-ray microtomography. The combination of electrochemical and physical measurements will allow you to gain insights into the mechanisms which can improve the cells performance helping to guide the design of next-generation electrodes which will be tested. By undertaking this design cycle, you will help contribute to the goals of the LiSTAR project which aims to build Li-S cells with performances beyond the theoretical capacity of Li-ion batteries.

**Project Goals**

Join the Faraday Undergraduate Summer Experience (FUSE) internship programme and learn more about the development of next generation lithium sulfur batteries, which will help in the development of a career in the field of battery technology and energy storage. In conducting the project:

* You will be working with a leading research group to develop the tools to allow for safer operation of battery systems.
* You will gain exposure to the methods used across the LiSTAR research programme to develop positive electrodes.
* You will become familiar with the electrochemical behaviour of Li-S batteries.
* You will conduct X-ray microtomography experiments, analysing the microstructure of the electrodes you have built.
* You will develop your analytical skills to relate different processes to the performance of batteries.

You will develop your presentation and reporting skills and enter a poster competition based on your research.

**Eligibility**

In order to partake in the project you must be:

* A full-time registered undergraduate student at a UK university.
* Undertake the internship within the years of undergraduate study (i.e. not be currently in your final year).
* Not have been a FUSE intern in a previous year.

**Funding**

A salary of £11.95 will be provided. The funding is provided by the [Faraday Institution](https://www.faraday.ac.uk/).

**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) 2022 internship, please complete the following [SURVEY](https://forms.office.com/e/Rk0Sd4kD9A), and send a CV to [j.b.robinson@ucl.ac.uk](mailto:j.b.robinson@ucl.ac.uk) by April 21st 2023 with ‘LiSTAR FUSE Application’ in the subject bar.

**Diversity**

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

At UCL, as London’s Global University, we know diversity fosters creativity and innovation, and we want our community to represent the diversity of the world’s talent. We are committed to equality of opportunity, to being fair and inclusive, and to being a place where we all belong.

We therefore particularly encourage applications from candidates who are likely to be underrepresented in UCL’s workforce.

You can read more about our commitment to Equality, Diversity and Inclusion here : <https://www.ucl.ac.uk/equality-diversity-inclusion/>

**Deadline**

April 21st 2023.