

**Exciting [Faraday Undergraduate Summer Experience \(FUSE\)](#) paid internship opportunities for summer 2023.**

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:** Life cycle assessment method for direct recycling of batteries

**Project description:**

With a surge in electric vehicles (EVs) in the coming decade and thus a rising demand for lithium-ion batteries (LIBs), concerns have been raised about the availability of the raw materials required, driving research into recycling methods to recover the materials from spent batteries. Direct recycling methods use mechanical separation techniques and provide a more environmentally friendly alternative to the conventional methods of pyrometallurgy (smelt in a furnace) and hydrometallurgy (chemical materials recovery). This work will involve exploring the process flow for a mechanical process to separate electrodes from the current collector, which enables the electrode material to be recovered in a relatively unaltered form.

The student will use openLCA to construct a flowchart of the process steps for separating electrodes in this way and assess the impacts involved in each step, e. g. human- or ecotoxicity, eutrophication potential, global warming potential, etc. The student will compare the impacts incurred against those from pyro- and hydrometallurgy.

**Learning Objectives:**

- How to conduct a literature review
- How to do a partial lifecycle assessment, using openLCA
- Basic knowledge of how batteries work
- Understanding recycling processes and their environmental impacts
- Understanding the life cycle of lithium batteries

**Supervisor:** Dr. Jacqueline Edge

**University:** Imperial College London

**Location:** Online, with occasional in-person meetings, as required and if possible.

**Start date:** The internship is a full-time role for 8 weeks during June – September 2023.

**Eligibility:**

Experience of any kind with batteries (either experimentally, theoretically, or otherwise) would be useful, but not essential.

You should be familiar with the methodology behind life cycle assessment methods and experience with an LCA software package would be useful.

**You must:**

- 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 final year or during a subsequent Masters' programme).
- Not have been a FUSE intern in a previous year

**Funding:**

A salary of £400 / week 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 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 this Faraday Undergraduate Summer Experience (FUSE) 2023 internship, you need to [complete this survey](#) and send a one-paragraph cover letter and CV to [j.edge@imperial.ac.uk](mailto:j.edge@imperial.ac.uk) by **April 12<sup>th</sup> 2023** with 'FUSE Application' in the subject field. We will be in touch shortly after this date.

**Diversity:**

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

We at Imperial College are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We therefore encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender identity, sex, or sexual orientation. We are an Athena SWAN Silver Award winner, a Disability Confident Leader and a Stonewall Diversity Champion.

**Terms and Conditions:**

By applying to this position, you agree that Imperial College London and the Faraday Institution can share information about you, such as your name, contact details and personal information, with each other, for the purpose of carrying out the Faraday Institution Summer Experience 2023.