

## 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:** Traceless delivery of singlet oxygen for assessing electrolyte degradation

### Project description:

Electrolyte degradation is a significant contributor to poor cyclability in next-generation high voltage lithium-ion batteries. Identifying mechanisms of degradation is crucial for designing robust electrolyte solutions. Singlet oxygen ( $^1\text{O}_2$ ) is often thought to play a key role in solvent degradation. However, existing methods to evaluate electrolyte vulnerability to this antagonist are complicated by the inclusion of  $^1\text{O}_2$  generators (peroxides, photocatalysts, etc) which can give misleading results. We aim to develop a methodology for screening electrolyte tolerance to  $^1\text{O}_2$  that decouples complications from these  $^1\text{O}_2$  generators. This will be achieved by formation of  $^1\text{O}_2$  in flow or by direct excitation of solubilized oxygen.

This project will be based at the University of Nottingham, working with the [Nottingham Applied Materials & Interfaces](#) (NAMI) group under the supervision of Dr Kieran D. Jones and Assoc. Prof. Lee Johnson. The student will have exposure to research in the areas of next-generation energy storage while they will focus on demonstration and optimization of the method for traceless formation of  $^1\text{O}_2$  and assessing electrolyte stability towards this antagonist. The project will utilize flow and photochemistry procedures to achieve this objective, paired primarily with gas/liquid chromatography mass spectrometry, ultraviolet-visible and nuclear magnetic resonance spectroscopy analytical techniques.

**Supervisor:** Dr Kieran D. Jones & Assoc. Prof. Lee Johnson

**University:** University of Nottingham

**Location:** The internship is a full-time in-person role located at the University of Nottingham Jubilee Campus working in the GSK Carbon Neutral Laboratory & Research Acceleration Demonstration Building

**Start date:** The internship is a full-time role for 8 weeks from June – September 2024

### 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 £12.00/ hour across the UK or £13.15 / hour in London will be provided. This will be determined by the working address of the appointee, not the university's location. 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 a Faraday Undergraduate Summer Experience (FUSE) 2024 internship, you need to complete the application form. Please click on the Survey Monkey link below, or you can scan the QR Code and go direct to the application form.

**Closing Date:** Monday 15<sup>th</sup> April 2024

<https://www.surveymonkey.com/r/FCatNottingham>



**Diversity:**

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

Details can be found at the following link:

[UoN Equality, Diversity and Inclusion – Policies and Information](#)