

## Internship opportunity with The Faraday Institution FUSE scheme

Studying a STEM degree in the battery sector? Battery Forensics in the Energy Innovation Centre (EIC), Warwick Manufacturing Group (WMG) will be hosting 1 Faraday Undergraduate Summer Experience (FUSE) paid internship in summer 2024 for an undergraduate student to spend 8-weeks working on the Faraday Institution SafeBatt project.

**Project title: CATION PaD (Current and Temperature Influence on Nucleation Propagation and Dendrite Growth)**

### Project description:

SafeBatt is focused on better understanding the science behind safety and this internship will support work on detecting early signatures of failure. Specifically, we will be exploring extreme testing conditions using small pouch cells based on NMC-811 and Graphite. Cells will be subjected to conditions of high current and low temperature in our innovative ThermoPod, with subsequent post-mortem characterization to investigate dendrite growth modes. We aim to use a combination of comprehensive electrochemical testing (using 3 electrode cells), imaging (SEM-SIMS) and other key characterisation techniques (XRF, XRD and NMR) to better capture the degradation of components. This is a very exciting opportunity to develop some really useful skills in the realm of battery forensics, working with state-of-the art characterization facilities and highly skilled, motivated researchers.

**Supervisors:** Dr Mel Loveridge, Dr Maria Balart-Murria, and Dr Puritut Nakhanivej

**University:** University of Warwick

**Location:** in-person program in Coventry, UK

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

### Eligibility:

- Be registered full-time undergraduate student from a UK university, preferably undertaking physics, chemistry or materials science degrees. However, much learning support would be given to anyone new to this area of science
- 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](#).

### Activities:

- Building three-electrode pouch cells and familiarisation with working in a dry room.
- Commissioning & testing a ThermoPod device for low & high temperature cycle tests.
- Learning skills around performing electron microscopy and other key characterisation techniques such as XRF, XRD, NMR. Access to the University of Warwick state-of-the art characterization facilities.
- How to write a cell test program.
- Understanding how to process and interpret cell test data.
- Understanding how to process microscopic data.

### 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.
- This is an exciting opportunity to be part of a dynamic consortium focused on critical scientific understanding of safety in Li-ion batteries.
- You will learn some valuable skills, critical for effective understanding of batteries – and get a taste of what battery research life is really like.
- There will be opportunities to access to the University of Warwick state-of-the art characterization facilities: at Energy Innovation Centre (EIC) in WMG; at Advanced Materials and Manufacturing Centre (AMMC) in WMG; at Warwick Chemistry Department; and at Warwick Physics Department.
- There will be opportunities to be involved with disseminating the outcomes and great opportunity to engage with other FI researchers at WMG.
- You will be invited to some SafeBatt meetings, have the opportunity to participate and understand what other SafeBatt partners are researching.
- 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, download and fill [this survey](#), and send the form along with your CV to [Puritut.Nakhanivej@warwick.ac.uk](mailto:Puritut.Nakhanivej@warwick.ac.uk). Application deadline is **23:59, 24<sup>th</sup> April 2024**.

### Diversity

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

Warwick is committed to building an organisation of mutual respect and dignity, promoting a welcoming, diverse, and inclusive working and learning environment. We recognise that everyone is different in a variety of visible and non-visible ways, and that those differences are to be recognised, respected, and valued. Where possible, we go beyond legislation to provide a place where everyone can thrive, supporting all staff to achieve their full potential. We aspire to remove economic, social, and cultural barriers that may otherwise prevent people from succeeding.

We therefore welcome and encourage applications from all communities regardless of culture, background, age, disability, sex/gender, gender identity or expression, ethnicity, religion/belief, or sexual or romantic orientation. To find out more about our social inclusion work at Warwick visit our webpages [here](#).

The University currently holds a Race Equality Charter Bronze Award, Athena Swan Silver Award and a Disability Smart Bronze Award. The University of Warwick is also one of the six founder institutions of the EUTOPIA European University Alliance.