Developing a User Interface for Acoustic Analysis of Li-Ion Batteries

Project Description

Ensuring battery safety is one of the most important factors when developing systems for electric vehicles. To ensure the safe operation of batteries diagnostic techniques can be deployed, to track the behaviour and provide a fingerprint of the current state of health of a system. These techniques can include thermal and electrical characterisation, however over the last few years acoustic tools have increasingly been deployed. Acoustic spectroscopy enables scientists to listen to the processes, which occur in a battery during operation and identify abnormal behaviour, which can predict the early degradation or ultimately the failure of a cell. The FUSE intern, supported by researchers at UCL, will support existing research attempting to develop a comprehensive understanding of the 'sound of batteries'. The intern will track the characteristic response of a battery during operation and correlate the signal with key markers in the electrochemical response of a cell. In doing this the intern will be contributing to a better understanding of the 'Science of Safety' and improving the fundamental understanding which is required to avoid battery failure.

Project Goals

Join the Faraday Undergraduate Summer Experience (FUSE) internship programme and learn more about the development of the 'Science of Safety' and battery diagnostics 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 SAFEBATT research programme to develop the Science of Safety and improve current systems
- You will become familiar with the electrochemical and acoustic behaviour of Li-ion batteries
- 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

It is our intention to run this as an in person project subject to the prevailing conditions at the beginning of the project therefore the appointee must be available in London during the project.

Funding
A salary of £9.90/hour across the UK or £11.05/hour in London will be provided. This will be determined by the working address of the appointee not the universities location. The internship is a full-time role for a period of 8 weeks between June and September. The funding is provided by The Faraday Institution.

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 send a short cover letter and CV to j.b.robinson@ucl.ac.uk or rhodri.owen@ucl.ac.uk by May 6th 2022 with 'SAFEBATT 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. Our Department is committed to an inclusive and supportive culture for all. In recruiting, we welcome the unique contributions that everyone can bring in terms of their education, opinions, culture, ethnicity, race, sex, gender identity and expression, nation of origin, age, languages spoken, religion, disability, sexual orientation and beliefs. We continually strive to have the systems in place to ensure that all members of the Department have equal access to opportunities, reach their full potential and maintain a work-life balance.

Deadline
Please send you CV and a brief cover letter to j.b.robinson@ucl.ac.uk or rhodri.owen@ucl.ac.uk by May 6th 2021