

Microstructural characterisation of Li-S battery electrodes

Project Description

Rechargeable Li-ion batteries are most commonly used to power modern-day electronics. Theoretically, Li-S batteries could provide much higher energy density and are the most promising alternative to Li-ion batteries; however, large-scale commercialisation is hindered by technological advancements. Along with traditional experimentation techniques, numerical modelling based on novel imaging techniques such as X-ray computed tomography (CT) provides the most viable means to predict the battery morphology, operation and performance.

Under this project, the FUSE intern, supported by researchers at UCL, will be introduced to advanced Li-S batteries and X-ray CT imaging of the electrodes. The intern will enhance the current microstructural analysis framework and generate morphological data to validate numerical models. This project aims to build on the foundation of image-based modelling and develop strong cross-functional battery modelling and image processing skills applicable to both traditional and advanced batteries. Finally, the knowledge gained through this project could be disseminated via posters, blogs and/or in the form of newsletters.

Due to the ongoing COVID-19 situation, the entire project will be running remotely, unless the existing restrictions are removed.

Project Goals

Join the Faraday Undergraduate Summer Experience (FUSE) internship programme and learn the fundamentals of Li-S battery technology. During this project, you will be introduced to X-ray CT analysis and microstructural characterisation of the advanced battery electrodes. You will also have the opportunity to learn more about image-based modelling of traditional and advanced batteries using specialised tools used by academics and researchers.

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)

Funding

A salary of £9.50/hour across the UK or £10.85/hour in London will be provided. This will be determined by the working address of the appointee, not the university's location. The internship is a full-time role for 8 weeks beginning in early July. The funding is provided by [The Faraday Institution](#).

Deadline

To apply for this internship, please fill in the questionnaire, by clicking the application link below. The deadline to fill the questionnaire is April 30th 2021.

[Questionnaire](#)

Shortlisted candidates will be requested to send their CV and a brief cover letter to rhodri.jervis@ucl.ac.uk or nivedita.kulkarni.14@ucl.ac.uk