

Exciting PhD opportunity with the [Faraday Institution](#).

Looking for a battery related career that contributes to creating a sustainable future? Keen to join a dynamic community of pioneering battery researchers seeking to find solutions to support a fully electric future?

The Faraday Institution Cluster PhD researchers receive an enhanced stipend over and above the standard EPSRC offer. The total annual stipend is approximately £20,000 (plus London weighting) plus an additional training package worth £7,000. Recipients will have access to multiple networking opportunities, industry visits, mentorship, internships, as well as quality experiences that will further develop knowledge, skills, and aspirations. [Read more](#).

Take a look at the bespoke [training programme](#) on offer.

Project: Towards carbon fibres based structural Li-S batteries

A fully funded 4-year studentship (PhD) is available in the Department of Chemical Engineering, at the Imperial College London under the supervision of Prof Magda Titirici in collaboration with Dr Rhodri Jervis in the Electrochemical Innovation Lab (EIL) at the Chemical Engineering Department at UCL. The PhD position is part of an exciting large interdisciplinary project, [LiSTAR](#) on Li-S batteries, funded by the Faraday Institution, a £42 million initiative to accelerate the electric vehicle revolution by overcoming the related battery challenges. The project brings together researchers from seven universities across the UK to develop a new generation of Li-S batteries with high energy density. LiSTAR address four key areas of research: cathodes; electrolytes; modelling platforms; and device engineering. In doing so, the LiSTAR consortium is seeking to enable rapid improvements in Li-S technologies, with the aim of securing the UK as the global hub for the research, development, and deployment of this emergent technology.

This exciting PhD project will investigate multifunctional Li-S electrodes which will be mechanically strong and, at the same time, be able to circumvent some of the major challenges in Li-S batteries associated with preventing dendrite formation at the anode via Li plating as well as the polysulfide shuttling effect. The electrodes will be based on carbon fibres which will be designed with different morphology, microstructure and surface chemistry using electrospinning. The PhD will work towards eliminating current collectors both at the anode and cathode via the design of conductive carbon fibres. Coupled with electrochemistry and in situ x-ray computed tomography characterisation at UCL, and other in operando characterisation techniques (mechanical testing, UV-VIS, NMR, FI-IR, SIMS-TOF, Atom Probe Tomography-Cryo TEM, XAS and XANES-CT), this project will set the base towards achieving high performance structural Li-S batteries by understanding structure-performance relationships and interfacial phenomena across different length scales.

You will interact with a diverse and dynamic group of PhD students and postdoctoral researchers, both within the Faraday Institution programme and the research groups at Imperial and the EIL in UCL. Further information on the area of research can be found at <https://www.titiricigroup.com> and <https://www.ucl.ac.uk/electrochemical-innovation-lab/>

Eligibility:

Applications are welcome from home and international students (although places for international students are limited. Please see [UKRI guidance](#) for more details).

Applicants should have a Master's degree or (equivalent) with First Class or Upper Second Class in Materials Science, Chemical Engineering, Physics or Chemistry. Expertise in materials synthesis and characterisation and electrochemistry is desired.

Application:

In order to apply for a Faraday Institution PhD position, you need to do both of the following:

1. Complete a Faraday Institution expression of interest form
<https://www.surveymonkey.co.uk/r/2K76M6V>
2. Applications must be made through the university's on-line application system
<https://www.imperial.ac.uk/chemical-engineering/research/phd-opportunities/> Please provide a cover letter summarising your research interests and suitability for the position; the contact details of two people able to provide a letter of reference; and a full curriculum vitae. Please also send a copy of your full application to Prof Titirici directly.

Informal inquiries may be made to [Prof Magda Titirici](#).

Diversity

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

The Department of Chemical Engineering at Imperial strives to provide a safe, welcoming, and equitable place to work and study for all. We encourage applications from under-represented groups.