THE FARADAY INSTITUTION CATMAT
NEXT GENERATION LI-ION CATHODE MATERIALS

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: Novel Cathodes for Lithium-ion Batteries

A fully funded 4-year studentship (PhD) is available in the School of Metallurgy and Materials, at the University of Birmingham under the supervision of Prof Emma Kendrick and Prof Peter Slater. This PhD is part of an exciting large interdisciplinary project, CATMAT (Cathode Materials), 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 five universities across the UK to develop a new generation of Li-ion cathodes. CATMAT is investigating the fundamental mechanisms at work within next generation cathodes, and is exploiting this new knowledge to inform the discovery of novel cathode materials with enhanced properties. We will identify the most promising new cathode materials, scaling up their synthesis and assimilating them into fully battery cells to demonstrate performance.

This exciting PhD project will investigate the materials synthesis, manufacturing and electrochemical testing of novel cathode materials. In particular we will look at enhancing the stability of high energy density cathodes, through surface coatings of the materials. These coatings can be synthesised in-situ in a battery or via a secondary manufacturing step, prior to making into an electrode. The effect upon the surface, chemical, structural and electrochemical properties of the cathode will be elucidated. The successful candidate will perform synthesis of novel materials and perform secondary coatings, these will then be utilised in electrochemical and structural analysis of the electrode materials. Full cells will be made and a suite of electrochemical and analytical techniques utilised to understand the electrode and cell properties. This PhD project will suit someone who has an enthusiasm and drive for research and is interested in battery and energy storage technologies. Some characterisation experience either materials or electrochemical would be useful but not essential as training and guidance in these techniques will be given.

Eligibility:

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

Informal inquiries may be made to Prof Emma Kendrick (e.kendrick@bham.ac.uk). The candidate will have or expect at least a II(i) Undergraduate honours degree or Masters degree (or equivalent) in Materials Science, Chemistry, Chemical Engineering, or related discipline. A background in materials and materials synthesis would be advantageous.

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.birmingham.ac.uk/schools/metallurgy-materials/phd/apply.aspx], 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.

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 University of Birmingham is *committed to creating and maintaining an inclusive learning and working environment where discrimination is not tolerated, where all members of the University can flourish and reach their full potential; where we engage with and learn from our community and where we affect positive change within the University, our city and wider society. We see this as integral to our mission and vision as a global university.*