Role: Visiting Research Fellowship (WMG)

Project: Recovering kinetically limited capacity loss in single-crystalline Ni-rich NMC-Graphite pouch cells for second life

As a Visiting Research Fellow, you will join the team led by Professor Louis Piper in WMG at the University of Warwick to work on a collaborative research project.

Job Purpose

This project aims to quantify the kinetics-related capacity losses in SC-NMC811//Graphite systems and explore mitigative cycling protocols to recover lost capacity. Industry-format pouch cells (from Degradation consortium WP0) will be aged through cycling under varying voltage windows at the University of Warwick. Then, multiple regenerative protocols will be applied to understand the specific effects of cycling rates and temperature on capacity recovery. The regenerated capacity can be quantified using electrochemical testing, with the changes in electrode properties measured via advanced characterization including operando X-ray and gas analysis techniques in collaboration with the University of Cambridge.

Duties and Responsibilities

As part of the FCDO VRF position awarded, you will:

- Contribute to a collaborative research project on the XRD analysis of battery materials
- Design new experimental methods/equipment to support investigations improving battery performance
- Perform experiments in lab within WMG, working collaboratively with fellow researchers and technical support team
- Translate knowledge of advances in the subject area into research activity.
- Write up research work for presentation/publication.
- Present information on research progress and outcomes to bodies supervising research, e.g. steering groups.
- Communicate complex information (orally and in writing) and material of a specialist or highly technical nature.
- Ensure compliance with health and safety in all aspects of work.
- Work within budget constraints

Knowledge, Skills and Qualifications

- Good honours degree and possession of a PhD or equivalent doctoral qualification in relevant discipline. Applicants with postdoctoral or equivalent status at the time of application are preferred. In exceptional cases, well-qualified individuals in the final stages of their PhD studies may be considered.
- Knowledge of electrode manufacture (slurry mixing/coating) and battery cell assembly
- Knowledge of electrochemical and material characterisation
- Good effective communication (oral and written English) skills, presentation and training skills
- Sufficient breadth or depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes
- Good interpersonal skills
- Ability and willingness to work as a member of a team and contribute positively to a collegial team environment and to be able to work independently
- Ability to initiate, plan organise, implement and deliver programmes of work to tight deadlines