

## Case Study

Energy Storage Materials Development

College of Science, Technology and Engineering

*James Cook University*

### **Our Aim**

The Energy Storage Materials Development Group at JCU designs and tests new battery materials prepared from common and plentiful resources (e.g. manganese, silicon).

We focus on low cost, low toxicity materials that are customised for different uses and applications suited to tropical environments.

### **Capabilities**

We have extensive experience and facilities for the synthesis of lithium-ion battery electrodes with a focus on environmentally friendly methods. We perform syntheses at low temperatures and use non-toxic, abundant starting materials. Our facilities include a controlled atmosphere glovebox, as well as tube furnaces and muffle furnaces for synthesis.



We prepare electrodes and test them with repeated electrochemical charge/discharge cycling in test cells, to determine their performance in terms of discharge voltage, electrochemical capacity, energy density and capacity retention with cycling.



### **Advanced Analytical Techniques**

We work with scientists from UNSW, the Australian Synchrotron and ANSTO to develop and apply advanced analytical techniques. These techniques are used to discover the reasons for the deterioration of battery performance with repeated charge/discharge cycling. This leads to innovative strategies to stabilize the storage materials and improve battery performance.

We aim to help industry develop energy storage solutions with improved safety, higher energy density, improved life span and performance. Enquire at JCU's [website](#) or contact Rosalind at [Rosalind.gummow@jcu.edu.au](mailto:Rosalind.gummow@jcu.edu.au) or Yinghe at [Yinghe.he@jcu.edu.au](mailto:Yinghe.he@jcu.edu.au)