

## **Advances in Lithium Battery Research UK 2016 (Bath, UK)**

The 4th annual Advances in Lithium Battery Research UK meeting was held at the University of Bath on the 31st of March and 1st of April 2016. This meeting brings together academic researchers and industry experts to present and discuss new results and developments in the fundamental science underpinning lithium-ion batteries and related technologies.

The meeting was attended by 54 participants, including academic researchers from across the UK, and representatives from commercial companies dealing with battery technologies (Renishaw, JEOL, Jaguar Landrover).

The meeting took place over two half-days and included 13 oral presentations (including 6 by invited speakers) on a range of topics, and an evening poster session where 18 posters were presented.

The first day focussed on cathode materials, and consisted of two sessions. In the first session we heard about the powerful combination of synthetic, analytical, and computational materials science being used to design and understand high voltage and high capacity cathode materials. A common theme across these presentations was the importance of oxide ion electrochemistry in these high performance materials. The second session consisted of three presentations of computational work, and showcased the ability of computational studies to study lithium transport in microscopic detail; describing Li extraction mechanisms at electrode surfaces, and the application of targeted strain to improve ionic transport in cathodes.

Following these talks, the poster session was held, with an accompanying drinks reception. A broad range of subjects were presented at the poster session, including Na-ion battery materials, Si nanotubes as Li-ion battery materials, advances in calculating accurate NMR spectra, epitaxial strain effects in solid lithium-ion electrolytes, high-capacity two-dimensional transition-metal carbides, and many more. Eight posters were presented by PhD students, who were able to attend the meeting thanks to student travel bursaries. Discussion of the day's presentations and posters continued at the meeting dinner.

The second day also consisted of two themed sessions. The first session covered solid lithium-electrolytes, with talks describing advances in synthetic methods, analysis of defect chemistry through NMR spectroscopy, and new molecular dynamics simulation techniques for resolving transport mechanisms. The second session covered anodes, including an invited talk by Damien Dambournet (UPMC, Paris) on highly cation-vacant fluorinated anatase  $\text{TiO}_2$ . The presentations were closed with a talk by Jon Goff (Royal Holloway, London) on diffusion in sodium-ion battery materials.

The meeting was made possible by generous financial support from CCP5, the STFC Global Challenge Network in Battery Science and Technology, and the Materials Chemistry Division of the Royal Society of Chemistry.