

Energy-materials research using neutron scattering at ANSTO

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As befits a national facility, the neutron-scattering science at the OPAL reactor at ANSTO is largely driven by the external user programme, through a peer-review proposal system for access to the neutron-beam instruments. Certain scientific themes, where neutrons offer distinct advantages, are also promoted within ANSTO, amongst which the research project *Functional Materials for Energy Devices and Systems*, led by Vanessa Peterson, and effectively a continuation of the highly successful *Energy Materials* project [1]. Of the six broad topics of focus: Hydrogen Production, Gas Storage and Separation, Fuel Cell Materials, Battery Materials, Thermoelectric Materials, and Solar Cell Materials, research into Battery Materials dominates, and has produced numerous pioneering results, including the first *in situ operando* studies of real batteries using neutron scattering. The magnetism theme [2] of the research project *Magnetism and Superconductivity*, coordinated by Max Avdeev, also includes research into magnetocaloric materials and the magnetic properties of battery materials, a knowledge of which aids fine-tuning of Density Functional Theory calculations to predict materials with improved performance.

This presentation will summarise current energy-materials research at ACNS within the context of the overall user programme.

References:

[1]

<http://www.ansto.gov.au/ResearchHub/OurInfrastructure/ACNS/CurrentResearch/ScientificProjects/EnergyMaterials/index.htm>

[2]

<http://www.ansto.gov.au/ResearchHub/OurInfrastructure/ACNS/CurrentResearch/ScientificProjects/Magnetism/index.htm>