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Development of Spectroscopic Neutron Imaging towards Advanced Electrolyte Characterization

As developments in renewable energy continue, the advancement of energy storage devices is pressed towards further innovation to meet efforts towards net-zero emissions. With energy storage systems, Li-ion batteries (LIBs) are the most widespread in applications from consumer electronics to grid storage due to their high energy density and long lifetime. Electrolyte engineering (which involves a careful selection of solvents, salts, and additives) is one of the simplest modifications in LIB technology to make an immense impact on improving performance. In this work, we develop a technique in neutron imaging, specifically spectroscopic neutron imaging (SNI), that leverages energy transfer with the sample to achieve chemically sensitive contrast. We will showcase the development of SNI and its prospective applications to advanced electrolyte characterization.

Session

Instrumentation

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