

# Understanding the function of working energy materials with multimodal characterization

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In this presentation, I will focus on the development of a new experimental approach to characterize energy materials such as catalysts, electrocatalysts and battery materials using a variety of x-ray and electron-based probes. The approach exploits microfabrication methods to create miniaturized experimental systems (e.g. catalytic reactors or miniaturized batteries) that can be utilized in both transmission electron microscopes as well as at synchrotron end-stations. This allows correlative, multimodal characterization of these systems ‘in their working environment’ (in *operando* conditions). I will describe how we use this to provide materials characterization using diffraction, imaging, and spectroscopy, using both x-rays and electrons, and will detail in particular our latest results on the use of electron pair distribution function analysis with this approach.