

In-situ XRD of Anode-Supported SOFC Cathodes

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PNNL has recently developed a technique for performing *in-situ* XRD analysis of working SOFC cathodes on anode-supported SOFCs. The purpose of this technique is to allow for correlation of observed physical changes over time with changes in cell performance. Repeated high temperature XRD measurements of a LSCF-6428 cathode during cell operation observed gradual lattice expansion of the LSCF. Such strain can be caused by the precipitation of various elements from the LSCF lattice, including Sr, Co, and O. The rates of exsolution of each of these elements that would be required to bring about the rates of lattice expansion that were measured for the LSCF cathodes are discussed. SEM with EDS and WDS analysis that was performed on the tested cathode is compared to results from a duplicate cell that was not tested.