

Real Space Mapping of Oxygen Vacancy Diffusion and Electrochemical Transformations by Hysteretic Current Reversal Curve Measurements

Disclosure Number

201202859

Technology Summary

The electrochemical energy storage and conversion systems based on solid-gas and solid-liquid reactions and local bias-induced transformations are a vital component of future energy and information technologies. Development of high energy and power density materials necessitates understanding the nanoscale mechanisms involved in secondary batteries, fuel cell and air-battery operation, including the interplay between the interfacial electrochemical reactions, oxygen vacancy diffusion, and structural defects. The present invention comprises an approach for probing of ion diffusivity and electrochemical reactivity on the nanometer length scales on the free electrochemically active surfaces and packaged devices, providing insight into the energy conversion and storage device operation on a level of single structural element.

Inventor

KALININ, SERGEI V

Center for Nanophase Matls Sciences Div

Licensing Contact

SIMS, DAVID L

UT-Battelle, LLC

Oak Ridge National Laboratory

Rm 124C, Bldg 4500N, MS: 6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 241-3808

E-mail: SIMSDL@ORNL.GOV

Note: The technology described above is an early stage opportunity. Licensing rights to this intellectual property may be limited or unavailable. Patent applications directed towards this invention may not have been filed with any patent office.