

# Dynamic Phenomena in Complex Oxides During Electrochemical Process

Ying Shirley Meng, Assistant Professor

Department of NanoEngineering, University of California San Diego

## Synthesis

- Solution based chemistry
- Solid state synthesis
- Pulsed laser deposition

Novel ceramic materials  
Thin film all solid-state  
Nano composites

## Modeling

- Ab Initio (VASP)
- Cluster Expansion
- Nudge Elastic Band (NEB)

Structure – property  
Predicting and explanatory

## Characterization

- Electrochemistry
- XRD, SEM, TEM etc.
- in situ UV spectroscopy

*In situ* techniques under  
intense development

## Collaborators

University of Florida: Jacob Jones – Time resolved XRD

Cambridge University: Clare Grey – Solid state NMR

Oak Ridge National Laboratory: Aberration corrected TEM/STEM/EELS

Stanford Synchrotron Radiation Light Source: in situ X-ray Absorption Spectroscopy (XAS)

