

Departmental Colloquium

Thursday, April 27, 2017, 3:30 pm
Seeley G. Mudd Room 124

Professor Héctor Abruña

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Operando Methods for The Study of Energy Materials

Abstract:

This presentation will deal with the development of *operando* methods for the study and characterization of fuel cell and battery materials. The presentation will begin with a brief overview of the methods employed. Particular emphasis will be placed on the use of X-ray diffraction (XRD), X-ray absorption spectroscopy (XAS), X-ray microscopy and tomography, and transmission electron microscopy (TEM) under active potential control. The utility of these methods will be illustrated by selected examples including electrocatalysts for the oxygen reduction reaction and spectroscopic studies of Li/S batteries. The use of operando TEM will be illustrated by studies of fuel cell catalyst degradation and coalescence and lithiation/delithiation dynamics of LiFePO₄ via energy-filtered TEM. Finally, the concept of symmetrical redox flow batteries will be demonstrated. The presentation will conclude with an assessment of future directions.

Hosted by Professor Richard Brutchey

The scientific community is invited