Dear Colleague:

The scientific community of the United Institute for Unique Chemistry (UIUC) is seeking input for new opportunities in the operando analysis of energy materials that interface capabilities at your institution with national laboratories. We are looking for scientific proposals based on multi-modal concepts, i.e. coupling of at least two techniques, from which the next leap in our understanding of the growth and structure/function relationships for materials will emerge. There is a great interest from the national laboratory community to highlight new developments in state of the art operando synchrotron, nuclear and high-performance techniques, and your proposal will work as a bridge to introduce these techniques into mainstream chemical challenges. In particular, we encourage proposals that integrate any of the following:

- Low pressure (environmental) X-ray photoelectron spectroscopy
- In situ Synchrotron X-ray measurements and imaging
- Ultra-fast and high resolution scanned probe microscopy
- In situ neutron diffraction
- Nuclear surface analysis, including accelerator ion beams

Currently, we are welcoming white papers (typically 3-4 pages long, plus references). White papers will be accompanied by a summary slide that depicts succinctly the project. White papers will include the following: A description of the work to be performed, an analysis of the characteristics of the chosen high-performance technique, a statement of the rationale for the choice of the national lab where the work will be carried, literature examples that establish critical components for demonstrating the feasibility of the proposed project, and the integration of research efforts with a technical component that can be carried out in the proposer’s laboratory. This last point can consider any type of scanned probe, spectroscopic, electrochemical, thermal, or sorption-based technique. Suggested topics include:

- Formation and/or properties of solid-electrolyte interphase in nanostructured anodes
- nanoparticle metal dissolution and reconstruction during electrocatalytic operation
- Epitaxy and atomic layer deposition of monolayer oxides in an oxidizing atmosphere
- Growth mechanisms of films of metal organic frameworks and coordination polymers
- Enzyme and/or protein-channel operation on biological membranes

White papers are due on 28/04 at 8 am and will be reviewed by an expert panel in the timeframe of a week. These white papers will be briefly presented and discussed by the expert panel on 05/05 and the proposing group will have the opportunity to answer questions regarding their ideas. Any questions about this activity, please refer to your cognizant program officer (JRL) or to future Dr. Kaili Zhang.

Urbana, 03/31/2015