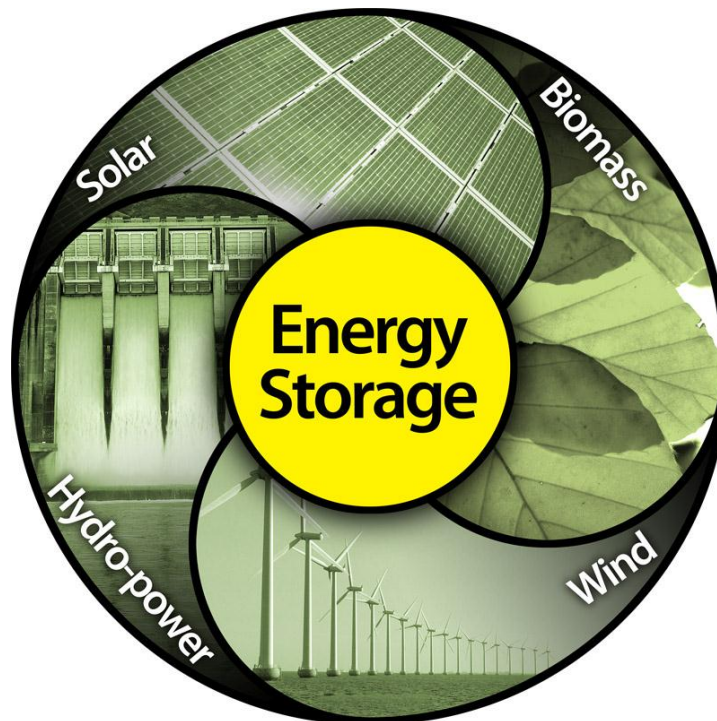


**3<sup>rd</sup> International Workshop**

## **Nanoscale Imaging for Energy Applications**



Organizers:

Olga Ovchinnikova, An-Ping Li, Sergei V. Kalinin, and Arthur P. Baddorf

**September 11-13, 2012**

The Center for Nanophase Materials Sciences  
Oak Ridge National Laboratory, Oak Ridge, TN USA

## Scope

Energy generation, storage, and conversion systems are an integral component of emerging green technologies, including solar power, automotive, and storage components of solar and wind energy economics. Despite the rapidly expanding manufacturing capabilities and wealth of phenomenological information on the macroscopic behaviors of energy storage and conversion systems, the microscopic mechanisms underpinning solar cell, battery and fuel cell operations in the nanometer to micron range are not well understood. This series of keynote and invited talks will cover the recent advances in characterization of energy relevant materials systems using Scanning Probe Microscopy (SPM) techniques, as well as the state of the art in energy dissipation and transformation measurements by SPM. Topics include mapping of carrier dynamics and photo-induced behavior of photovoltaic materials, ionic and electronic transport in fuel cells and Li-ion batteries, energy harvesting, and energy dissipation imaging by multiple resonant and band excitation SPMs, as well material characterization using mass spectrometry combined with SPM and optical spectroscopies for multimodal imaging. A number of contributed talks will be included. Ultimately, our goal is to build a network of materials scientists centered on the applications of SPM for energy problems and to promote rapid dissemination of theoretical knowledge, experimental protocols, and novel technique development in this rapidly growing area.

The 3rd International Workshop on Scanning Probe Microscopy for Energy Applications will be hosted in conjunction with the Annual Symposium of the Tennessee Valley Chapter (TVC) of AVS. The TVC-AVS focus session is an interdisciplinary meeting to discuss advances in SPM and applications of nanostructure analysis. Contributions from all areas of nanoscience and vacuum science are encouraged.

## Invited Speakers

- Richard Caprioli, Vanderbilt University – *Multi-modal imaging: Combining MALDI-MS imaging with MRI and microscopy*
- Phillip First, Georgia Institute of Technology – *Measuring the effects of scalar and vector potentials in graphene*
- M. Hersam, Northwestern University – *Scanning probe microscopy of energy materials*
- Lincoln Lauhon, Northwestern University – *Correlated functional imaging of energy interconversion in hybrid Nanostructures*
- M. Pan, Oak Ridge National Laboratory – *Oxide surfaces on atomic scale: STM quest*
- V. Sethuraman, Brown University – *Strain dynamics in energy materials*
- Z.L. Wang, Georgia Institute of Technology – *Nanopiezotronics and nanowire based energy harvesting*
- Nick Winograd, Pennsylvania State University – *Nanoscale chemical imaging of biomaterials with mass spectrometry*
- Vasilisa Zorba, Lawrence Berkeley National Laboratory – *Optical near and far-field femtosecond laser ablation for nanoscale chemical imaging*

## Call for Abstracts—Talks and Posters

Both oral and poster presentations are welcome. A limited number of graduate student fellowships will be awarded to reimburse the registration fee and lodging at the conference hotel. Abstracts must be received by August 13. Instructions and on-line submission will be provided at the CNMS web site, [www.cnms.ornl.gov](http://www.cnms.ornl.gov). Contact An-Ping Li ([apli@ornl.gov](mailto:apli@ornl.gov)) for additional information on abstract submission, Olga Ovchinnikova ([ovchinnikovo@ornl.gov](mailto:ovchinnikovo@ornl.gov)) for student fellowship.