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Postdoctoral Research Associate – Time Resolved Scanning Probe Microscopy

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Date: Jan 7, 2019

Location: Oak Ridge, TN, US, 37830

Company: Oak Ridge National Laboratory

Requisition Id 466

Purpose:

The Center for Nanophase Materials Sciences (CNMS) is seeking a Postdoctoral Research Associate to support the development and application of time resolved scanning probe microscopies (SPM) for investigation of electronic and ionic coupling, dielectric properties and electrochemical processes in electroactive systems. The goal will be to investigate nanoscale processes on device behavior and performance by correlating information available through broadband electrochemical methods (e.g. cyclic voltammograms, electrochemical impedance microscopy) with information on local structure and kinetics as captured by time resolved SPM. One part of this is to improve the veracity, temporal and spatial resolution of existing time resolved Kelvin probe (KPFM), Piezo response (PFM) and Electrochemical force microscopies (EcFM) by utilizing the principles of full information capture (G-Mode).

As a Postdoctoral Research Associate, you will contribute to the continued development and application of time resolved imaging and spectroscopy SPM platforms. Application will be to fields including conducting polymers, energy storage materials and photovoltaic materials. An emphasis will be placed on combining these methods with external stimuli such as electric/magnetic fields, light, or temperature, more sensitive detection methods including interferometric detection in both controlled and liquid environments. You will then contribute to development of a relevant analysis framework for extraction of materials functionalities. This position resides in the Scanning Probe Microscopy Group in the Center for Nanophase Materials Science (CNMS), Physical Sciences Directorate (PSD) at Oak Ridge National Laboratory (ORNL).

Major Duties/Responsibilities:

- Participate with a dynamic team conducting research to develop cutting edge characterization capabilities to improve our understanding of nanomaterials
- Integrate optical, thermal, magnetic and electrical excitation methods with existing time resolved SPM techniques (e.g. G-PFM, G-KPFM)
- Lead efforts in extending these techniques to the solid-liquid interface
- Contribute to efforts in combining local probe and macroscopic broadband electrochemical methods
- Incorporate recent advances in the areas of interferometric detection
- Develop relevant acquisition and analysis codes and workflows
- Present and report research results and publish scientific results in peer-reviewed journals in a timely manner

Basic Qualifications:

- A PhD in Physics, Materials Science & Engineering, Electrochemistry or closely related field completed within the last 5 years

Preferred Qualifications:

- A strong background in SPM imaging

- An excellent record of productive research demonstrated by publications in peer-reviewed journals
- Demonstrated knowledge of functional imaging by SPM (e.g. KPFM, PFM, ESM)
- Background in in-situ SPM
- Experience with data analysis and simulations using Python or MatLab
- Experience with data acquisition and control systems hardware and software such as Labview
- Excellent written and oral communication skills and the ability to communicate in English to an international scientific audience

Other Information:

The appointment length will be up to 24 months with the potential for extension. Initial appointments and extensions are subject to performance and availability of funding.

Please provide a list of publications when applying for this position. Three letters of reference are required and can be uploaded to your profile or emailed directly to PSDrecruit@ornl.gov. Please include the title of the position in the subject line.

This position will remain open for a minimum of 5 days after which it will close when a qualified candidate is identified and/or hired.

We accept Word (.doc, .docx), Adobe (unsecured .pdf), Rich Text Format (.rtf), and HTML (.htm, .html) up to 5MB in size. Resumes from third party vendors will not be accepted; these resumes will be deleted and the candidates submitted will not be considered for employment.

If you have trouble applying for a position, please email ORNLRecruiting@ornl.gov.

ORNL is an equal opportunity employer. All qualified applicants, including individuals with disabilities and protected veterans, are encouraged to apply. UT-Battelle is an E-Verify employer.

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