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Postdoctoral Appointee - 3D Visualization Group

Requisition Number: 402254**Location:** Lemont, IL**Functional Area:** Research and Development **Division:** MSD-Materials Science Division**Employment Category:** Temporary 6
Months or Greater**Education Required:** Doctorate Degree**Level (Grade):** 700**Shift:** 8:30 - 5:00

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Position Description

A postdoctoral position is available in the 3D Visualization Group of the Materials Science Division (MSD), which aims to understand the novel and emergent behavior in nanoscale magnetic, ferroelectric and resistive switching structures. In particular we seek to understand how the local energy landscape in the nanostructures controls domain behavior and transport behavior, and how it is influenced by geometric patterning or confinement and through interfacial interactions.

The specific research project involves the use of advanced Lorentz transmission electron microscopy (LTEM) and atomic force microscopy (AFM) to carry out quantitative analysis of the domain behavior of nanoscale ferromagnetic heterostructures, in particular using in-situ experiments to explore the response to magnetic and electric fields and to, temperature variation. Correlating this with microstructure/composition will enable the local energy landscape of the nanostructures to be determined. The post-holder will also be responsible for fabrication of suitable TEM/AFM samples using focused ion-beam systems or electron beam lithography. Some amount of modeling and simulation work will also be required.

Position Requirements

Knowledge, Skills and Experience

- Considerable experience in analysis of thin film and/or nanostructured materials using advanced TEM, LTEM and AFM techniques.

- Strong background in Materials Science or Physics.
- Min. Education: Ph.D (< 3 yrs since Ph.D)
- Familiarity with image processing and simulation software.
- (Preferred) Experience with nanofabrication, magnetic domain imaging, transport measurement, thin film deposition.

Responsibilities

Safety, Security, and Environmental Protection: All activities, as they apply to work performed by self or by personnel under supervision, will be executed in compliance with ES&H and security responsibilities established by Argonne National Laboratory's ES&H policies, Safeguards and Security policies, work rules, and safe practices.

Major Action and Supporting Actions

- Perform advanced transmission electron microscopy and atomic force microscopy studies of nanoscale functional heterostructures. (75%)
- Publish results in refereed journals and makes oral presentations at meetings, conferences, symposia and seminars.(15%)
- Maintain up to date awareness of developments in the relevant areas of research.(10%)

This position description documents the general nature and level of work but is not intended to be a comprehensive list of all activities, duties and responsibilities required of job incumbent. Consequently, job incumbent may be required to perform other duties as assigned.

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