

ORNL Publications

External Publication

Job Posting Title

Postdoctoral Research Associate in Neutron Scattering and Data Analysis / NB50603622

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Purpose

The Neutron Sciences Directorate (NScD) at Oak Ridge National Laboratory (ORNL) operates the High Flux Isotope Reactor (HFIR), the United States' highest flux reactor based neutron source, and the Spallation Neutron Source (SNS), the world's most intense pulsed accelerator based neutron source. Together these facilities operate 30 instruments for neutron scattering research, each year carrying out in excess of 1,000 experiments in the physical, chemical, materials, biological and medical sciences. The Computing and Computational Sciences Directorate (CCSD) in ORNL is home to some of the world's most advanced supercomputing. To learn more about Neutron Sciences at ORNL go to: <http://neutrons.ornl.gov>.

The Quantum Condensed Matter Division (QCMD) <https://neutrons.ornl.gov/qcmd> in the Neutron Sciences Division (NScD) at ORNL operates 13 instruments for elastic and inelastic neutron scattering studies of materials including the Magnetism Reflectometer. Instruments are located at both HFIR and SNS. QCMD conducts research on materials with emergent properties that are manifestly quantum in origin. Some examples of current interest include superconductivity, topological insulators, low dimensional magnetism, nanocomposite and mesoscale magnetic materials.

Quantum Condensed Matter Division (QCMD) has an immediate opening for an outstanding candidate for a postdoctoral position with a strong background in Physics and with skills in computer/computational science to be involved in development of highly optimized software tools for the analysis and modeling of Grazing Incidence Neutron Scattering at the Spallation Neutron Source of the interface driven properties of complex heterostructures.

This position will be located in the Thin Films and Nanostructures Group of the Quantum Condensed Matter Division (TFN QCMD) and benefits from strong interactions with the Center for Nanophase Materials Sciences (CNMS) and Computing and Computational Sciences Directorate (CCSD) at ORNL and will comprise a diverse spectrum of nanoscience activities.

Neutron Reflectometry at the SNS is used to investigate thin film heterostructures which exhibit unusual physical properties that are important for science and technology and represent recent key innovations. The availability of high performance polarized and unpolarized neutron reflectometry is vital for understanding properties in the systems that include: (i) innovative new generation of heterostructures based on integrating topological insulators with conventional materials to induce ferromagnetic interactions with symmetry breaking at the interface ; (ii) multifunctional oxide heterostructures with unusual physical properties important from both the fundamental and device application viewpoints; (iii) spintronic devices using magnetic tunnel junction with a perpendicular magnetic anisotropy, (iv) tunnel barriers in hybrid organic/metallic spin-valve structures; and (v) structural characteristics of active layers in organic photovoltaic devices.

The successful candidate will conduct scientific research using exceptional experimental capability and will be engaged in development of highly optimized software tools for the analysis and modeling of Grazing Incidence Neutron Scattering

(GINS) at the Spallation Neutron Source of the interface driven properties of complex heterostructures. Full training will be given in all aspects of neutron reflectometry including beamline operation, data acquisition, processing and modeling.

Major Duties/Responsibilities

- * Conduct research on a mutually agreed topic in magnetic thin films and nano-structures using the Magnetism Reflectometer and other instruments as appropriate and to publish scientific papers resulting from this research and present results at appropriate national and international meetings.
- * The successful candidate will be part of the Thin Films and Nanostructures group in the Quantum Condensed Matter Division at ORNL and will be expected to take part in all group activities, which include seminars and monthly meetings.
- * Ensure compliance with environment, safety, health and quality program requirements.
- * Maintain strong commitment to the implementation and perpetuation of values and ethics.
- * Physical requirements for this job include the use of hand and eye protection gear, kneeling, sitting for extended periods of time, extensive work at chemical laboratories, and possible exposure to ionizing radiation normally associated with operation of neutron scattering instruments for scientific research.

Qualifications Required

Applicants must hold a Ph.D. in physics, chemistry, chemical engineering, materials science or a related discipline from an accredited institution. Candidates must be self-motivated and have good interpersonal, communication and presentational skills. The date of application must be within 5 years of the most recent degree, and all degree requirements must be complete before starting the appointment. Certain exceptions may be considered. This position is a temporary, full-time assignment of 24 months with a possibility of an extension of up to 12 months depending on the funding situation. Initial appointments and extensions are subject to performance and availability of funding.

Qualifications Desired:

Previous experience with neutron or x-ray reflectometry is desirable as well as experience in programming languages such as C/C++/Fortran, Python.

Work Directions and Interfaces

Reports to Valeria Lauter. Will interface with the MR instrument team, Software scientists.

Questions about the position may be directed to Valeria Lauter (lauterv@ornl.gov)

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), Excel(.xls, .xlsx), PowerPoint(.ppt, .pptx), Adobe(.pdf), Rich Text Format(.rtf), HTML(.htm, .html) and text files(.txt) up to 2MB 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.

Notice: If the position requires a Security Clearance, reviews and tests for the absence of any illegal drug as defined in 10 CFR 707.4 will be conducted by the employer and a background investigation by the Federal government may be required to obtain an access authorization prior to employment and subsequent reinvestigations may be required.

If the position is covered by the Counterintelligence Evaluation Program regulations at 10 CFR 709, a counterintelligence evaluation may include a counterintelligence-scope polygraph examination.

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.