TITLE: Postdoctoral Research Associate, High-Speed X-ray diffraction (U.S. Citizens preferred)

Overview

The Material Measurement Laboratory of the National Institute of Standards and Technology is seeking persons (U.S. Citizens preferred) to develop metrologies for high-speed X-ray diffraction with applications in characterizing metal additive manufacturing (AM). The postdoc will contribute to algorithm design and hardware automation for real-time diffraction analysis to enable high-speed structural metrology for AM.

Duties

- Developing methodology for analyzing complex synchrotron XRD datasets of additively manufactured metal alloys, including fast and scalable methods for multiphase phase identification and scalable methods for quantitative measurement of phase fractions and microstructure.
- Supporting design and implementation of instrumentation and hardware control systems for autonomous X-ray diffraction experiments. Assisting in integration of experimental workflows with predictive modeling tools to guide real-time decision-making in AM.
- Coordinating with national lab partners at the Advanced Photon Source to deploy and optimize high performance analysis and autonomous control workflows.
- Sharing research findings through publications, conference presentations, and technical reports.

Required Skills, Expertise and Qualifications

- Ph.D. in Materials Science, Physics, Mechanical Engineering, or a related field.
- Demonstrated experience developing novel machine learning / data science methods for scientific data analysis relevant to X-ray diffraction.
- Hands-on experience with synchrotron X-ray diffraction experiments. Experience with high throughput experimentation strongly preferred
- Strong experience in scientific computing, workflow development, and data management.
- Substantial experience in synchrotron diffraction analysis, including conventional advanced analysis and machine learning for phase mapping and identification; experience with multi-phase diffraction data strongly preferred.
- Strong proficiency in both Python and Julia for conventional data analysis, training and running deep learning models, experiment automation, and workflow development.
- Excellent communication and teamwork skills for interdisciplinary collaboration.

Employment Terms: This opportunity is to be an associate researcher in the NIST Materials Measurement Science Division for a term of 1 year, with options to renew. Associate researchers are NOT Federal Employees, but they work along with NIST researchers and with NIST's often world class instrumentation. Relocation expenses will not be provided. U.S. Citizens hired into associate positions may have the opportunity to seek longer term Federal Employment.

Salary: up to $85,500 annually, commensurate with the candidate's qualifications and experience.

How to express interest: Persons (U.S. Citizens Preferred) who meet all of the required qualifications and who would be interested in taking this position are invited to express their interest by sending an email that briefly describes their qualifications along with a CV to 643assoc@nist.gov. US Citizens should note "US Citizen" and the opportunity title in the email subject line. All others should note "Non-US Citizen" and the opportunity title in the email subject line.