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

Overview

The Materials Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified candidates (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 experimental design, instrumentation, and real-time diffraction analysis to enable high-speed structural metrology for AM, while working in a collaborative national laboratory environment to develop measurement capabilities with direct impact on advanced manufacturing and U.S. industry.

Duties

- Supporting the design and implementation of the instrumentation and hardware control systems for autonomous X-ray diffraction experiments.
- Coordinating with national lab partners at the Advanced Photon Source, Argonne National Laboratory, to deploy and optimize experimental setups.
- Developing and executing synchrotron XRD experiments for in-situ structural analysis of additively manufactured metal alloys.
- Assisting in the integration of experimental workflows with predictive modeling tools to guide real-time decision-making in AM.

Required Skills, Expertise and Qualifications

- Ph.D. in Materials Science, Physics, Mechanical Engineering, or a related field.
- Hands-on experience with synchrotron X-ray diffraction experiments and data analysis, including advanced methods, such as Rietveld analysis and deviatoric strain analysis.
- Strong background in instrumentation, experimental automation, and hardware control in scientific research, including working knowledge of G-code-based motion or process control systems.
- Substantial experience in additive manufacturing, preferably directed energy deposition.
- Proficiency in Python for data analysis, experiment automation, and workflow development.
- Strong interest in autonomous metrology and machine-learning-enhanced measurement systems.
- Excellent communication and teamwork skills for interdisciplinary collaboration.
- Experience with additive manufacturing process modeling using commercial or research software.

Employment Terms: This opportunity is to be an associate researcher in the NIST Materials Science and Engineering 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: $75,000 to $85,000 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.