

PREP Research Associate

This position is part of the National Institute of Standards (NIST) Professional Research Experience (PREP) program. NIST recognizes that its research staff may wish to collaborate with researchers at academic institutions on specific projects of mutual interest, thus requires that such institutions must be the recipient of a PREP award. The PREP program requires staff from a wide range of backgrounds to work on scientific research in many areas. Employees in this position will perform technical work that underpins the scientific research of the collaboration.

A postdoctoral fellow is sought for a position in Structural Engineering to contribute to cutting-edge work on resilience-based seismic design of steel structures. This opportunity is part of a high-impact research effort focused on advancing the science of seismic design to enable the functional recovery of steel buildings at both the component and system levels. The researcher will collaborate closely with leading experts at NIST and academia to accelerate the development of next-generation seismic design and post-earthquake evaluation procedures.

Research Title: Design of Steel Structures for Functional Recovery

Key Responsibilities:

- Synthesize knowledge from past experimental tests and high-fidelity models of structural steel components.
- Develop new nonlinear finite element models to address key data gaps in steel component behavior.
- Develop and validate functional recovery design limits for various steel components and systems
- Translate findings into technical guidance that informs seismic design for functional recovery, post-earthquake assessment, and decision-making for structural engineers.
- Conduct nonlinear dynamic analyses and consequence modeling across a suite of steel building archetypes to demonstrate the real-world application of the developed procedures.
- Prepare high-quality research papers for peer-reviewed journals, and present findings at national conferences.

Qualifications

- U.S. citizenship is preferred
- Ph.D. in Civil Engineering with a focus on the behavior of steel structures
- Strong background in the experimental testing of structural steel components and nonlinear analysis of steel systems, with emphasis on seismic effects
- Experience in developing high-fidelity finite element models of steel components and calibrating them to test results
- Experience in developing and validating high-fidelity finite element models for steel buildings
- Experience in developing and validating steel component modeling parameters against experimental outcomes and finite element models
- Proficiency in Python and/or MATLAB
- Excellent written and oral communication skills
- Strong publication record in leading peer-reviewed journals

Please upload the following with your application:

- Curriculum vitae

Privacy Act Statement

Authority: 15 U.S.C. § 278g-1(e)(1) and (e)(3) and 15 U.S.C. § 272(b) and (c)

Purpose: The National Institute for Standards and Technology (NIST) hosts the [Professional Research Experience Program \(PREP\)](#) which is designed to provide valuable laboratory experience and financial assistance to undergraduates, post-bachelor's degree holders, graduate students, master's degree holders, postdocs, and faculty.

PREP is a 5-year cooperative agreement between NIST laboratories and participating PREP Universities to establish a collaborative research relationship between NIST and U.S. institutions of higher education in the following disciplines including (but may not be limited to) biochemistry, biological sciences, chemistry, computer science, engineering, electronics, materials science, mathematics, nanoscale science, neutron science, physical science, physics, and statistics. This collection of information is needed to facilitate administrative functions of the PREP Program.

Routine Uses: NIST will use the information collected to perform the requisite reviews of the applications to determine eligibility, and to meet programmatic requirements. Disclosure of this information is also subject to all the published routine uses as identified in the Privacy Act System of Records Notices: NIST-1: NIST Associates.

Disclosure: Furnishing this information is voluntary. When you submit the form, you are indicating your voluntary consent for NIST to use of the information you submit for the purpose stated.