

**PREP Research Associate
CHIPS Funded Project.**

This position is part of the National Institute of Standards and Technology (NIST) Professional Research Experience Program (PREP). NIST recognizes that its research staff may want to collaborate with researchers at academic institutions on specific projects of mutual interest and, therefore, requires those institutions to be recipients of a PREP award. The PREP program involves staff from a wide range of backgrounds conducting scientific research across various fields. Individuals in this position will perform technical work supporting the collaboration's scientific research.

Research Title:

Integrated Photonics for Quantum Sensing

The work will entail:

We are looking for a postdoctoral scholar to design, fabricate, and/or test integrated photonics for one or more of the following application areas:

- Meta-optics for coupling to free-space optical modes, e.g., interfaces to atomic systems
- High-Q optical microcavities for laser frequency stabilization and precision sensing
- Electro-optics for light modulation and/or phase control
- Robust test structures for characterizing nanofabrication accuracy, identifying optical losses, etc.

This work will be highly collaborative with interactions spanning multiple labs across NIST. The postdoc will work with a team to carry out the design/fabricate/test workflow, where “design” entails simulating integrated photonic structures to estimate optical properties such as loss and dispersion, and creating GDS layouts of designs; “fabricate” entails using tools supported by the NIST Center for Nanoscale Science and Technology, such as EBL and LPCVD, to realize designed structures; and “test” entails performing measurements of the fabricated structure’s optical properties using lasers, spectrometers, etc.

U.S. Citizen Preferred

Key responsibilities will include but are not limited to:

- Analyze heterogeneous data sources.
- Use analysis to iterate device designs and collaborate with others to do so.
- Present results at internal meetings, and occasional meetings with external stakeholders.
- Publish results in the relevant scientific literature when appropriate.

Qualifications

- PhD in physics, electrical engineering, or a related field.
- 5+ years of experience, as evidenced by publications or recommendations, with integrated photonics.
- Familiarity with electromagnetics simulation software such as COMSOL or Lumerical.
- Familiarity with nanofabrication techniques such as EBL and LPCVD.
- Familiarity with optical measurement techniques for loss, dispersion, noise, etc.
- Ability to develop prototypes of tools needed to analyze data.
- Strong oral and written communication skills.

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 the 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. By applying to a CHIPS-funded PREP opportunity, you also acknowledge that participation in the project requires signing a Non-Disclosure Agreement (NDA) prior to beginning any work.