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.

Research Title:

- Chip-Scale Atomic Devices

The work will entail:

- This work entails the design, fabrication and testing of compact devices based on atomic spectroscopy and microfabrication. Devices to be built include atomic clocks, magnetic sensors, current and voltage references, temperature references, wavelength references and photonically-integrated light-atom systems. Devices will be designed to achieve specific performance goals such as frequency stability and magnetic sensitivity. They will be fabricated using micromachining of silicon, glass, and other substrates. They will be tested using intrinsic stability/sensitivity noise measurements or by comparison with other clocks/sensors.

Key responsibilities will include but are not limited to:

- Designing instruments to realize/measure frequency, magnetic field, current, voltage, temperature, or wavelength
- Constructing instruments using micromachining processes and other laboratory fabrication techniques
- Assessing the performance of instruments by taking data related to their stability and sensitivity
- Presenting results at internal meetings and occasional meetings with external stakeholders
- Writing research papers describing device design, construction and operation
- Ensuring that results, protocols, software, and documentation have been archived or otherwise transmitted to the larger organization.

Qualifications

- **U.S. Citizen Preferred**
- Required: PhD in atomic physics, quantum information science, laser science or related field
- Required: Experience using lasers in the laboratory
- Preferred: Experience with atomic spectroscopy
- Preferred: Experience with cleanroom fabrication of silicon devices
- Preferred: Experience with analog and digital electronics
- Preferred: Knowledge of one or more programming languages such as Python, Matlab or LabView
- Preferred: 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 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.