

## 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:

- Micromachined cell fabrication

### The work will entail:

- This work entails the development of fabrication processes for compact cells filled with alkali atoms. Wafers of silicon with holes in them will be processed to create arrays of vapor cells using a parallel process sequence. Cells will be evaluated using optical and microwave spectroscopy to assess their suitability for use in compact instruments such as clocks and magnetometers. The process will be refined to produce high yield and uniformity across the wafer.

### Key responsibilities will include but are not limited to:

- Developing processes for fabricating vapor cells
- Carrying out spectroscopic measurements to evaluate vapor cells
- 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- Ensuring that results, protocols, software, and documentation have been archived or otherwise transmitted to the larger organization.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 Physics or Material Science
- Preferred: Experience using lasers in the laboratory
- 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

### COLORADO O\*NET WAGE CATEGORIES FOR PREP POST POSITIONS ONLY!

- **[19-2012.00](#) Physicists**  
Conduct research into physical phenomena, develop theories on the basis of observation and experiments, and devise methods to apply physical laws and theories.  
[View Wages for OES/SOC 19-2012: Physicists](#)
- **[17-2199.07](#) Photonics Engineers**  
Design technologies specializing in light information or light energy, such as laser or fiber optics technology.  
[O\\*Net™ JobZone: 4](#)  
[Education & Training Code: No Level Set](#)

### 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.