

**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:**

PREP0004209 – 672.01 (CHIPS) - Piezoelectric Materials Growth Graduate Researcher

**The work will entail:**

Primary responsibilities will be film growth by reactive magnetron sputtering, chemical and structural characterization, and measurement, interpretation, and analysis of electrical and electromechanical properties. Such work will be carried out in close collaboration with partners at NIST as well as the National Laboratory of the Rockies, industry partners, and colleagues at other universities. The position will require publishing findings in peer reviewed journals, presenting the work at project meetings and scientific conferences, and mentoring graduate and undergraduate students. Ample opportunity for authoring and co-authoring funding proposals will also be provided. The candidate must be interested in learning the measurement and interpretation of piezoelectric properties, ferroelectric hysteresis, and/or semiconductor devices.

**U.S. Citizen Preferred**

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

- Thin film growth (and monitoring / optimization of such) via reactive magnetron sputtering
- Measurement, interpretation, analysis, and reporting of structural, chemical, electrical, and electromechanical characteristics of thin films
- Interaction with interdisciplinary partners on publication, reporting, and device prototyping
- Play critical role in writing up research for project reports and archival journals and presenting results at national and international conferences.

**Qualifications:**

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**Education and Experience:**

- B.S. in materials science and engineering or related field with an emphasis on semiconductor devices, functional ceramics, or related topics

**Minimum Knowledge, Skills, and Abilities:**

- Basic experience with laboratory equipment
- Basic experience with materials characterization such as x-ray diffraction, electron microscopy, Scanning probe microscopy, etc.
- Laboratory safety training
- Strong oral and written communication in English language

***Preferred Knowledge, Skills, and Abilities:***

- Film growth via RF magnetron sputtering
- Textured/epitaxial film analysis via advanced diffraction techniques such as rocking curve, pole figure, and/or reciprocal space mapping.
- Measurement and analysis of piezoelectric and/or ferroelectric properties
- Characterization of RF resonator devices.
- Measurement and interpretation of electrical properties using probe station.

**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.