

## PREP Research Associate

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:

Infrared Microscopy for Microplastics Characterization (U.S. Citizens preferred)

### The work will entail:

The Material Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified persons (U.S. Citizens preferred) to advance a novel quantum cascade laser (QCL) infrared (IR) microscopy technique for high-throughput measurement of size distribution and chemical identification of microplastic samples. The position will harness a groundbreaking QCL-IR imaging of microplastics in water by addressing nontrivial measurement problems due to the strong IR absorption by water and strong scattering contribution at <10  $\mu\text{m}$  microplastics. The outputs of this work will help improve measurement assurance for microplastics characterization with less irregularity in sample preparation and more reproducibility in size quantitation. Working at NIST offers the rare opportunity to collaborate with world-class experts in a mission-driven environment, utilizing state-of-the-art microscopes to turn observations into reproducible science. It is a chance to leave a lasting legacy on the circular and champion sustainability by ensuring a foundation of sound measurement science.

### U.S. Citizen Preferred

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

- Advance the instrumentation for high-throughput QCL-IR microscopy
- Collect and analyze IR hyperspectral images of microplastics
- Discuss progress and results with NIST staff
- Present results at internal meetings, and occasional meetings with external stakeholders
- Write papers based on method advancements and datasets collected

#### Qualifications

- Ph.D. degree in Chemistry, Physics, Polymer Physics, or a related field
- 2+ years of experience with IR microscopy
- Ability to analyze vibrational spectral 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 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.