

Job Opportunity: Postdoctoral Researcher
National Institute of Standards and Technology (NIST)

NIST has recently launched a new 5-year project to develop a compact far-infrared metrology platform that could significantly impact climate research and astrophysics. We are seeking a postdoctoral researcher who can contribute to this project through the design and development of novel infrared measurement technologies. The candidate chosen for this position will be hired through the 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 enables graduate students and postdocs 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:

Far-Infrared Laser Spectroscopy and Spectro-radiometry

The work will entail:

The Far-Infrared Virtually Imaged Radiometry [*FIRVIR*] for Climate Metrology project will design, build, and characterize dispersive spectrometers and detector arrays to establish an SI-traceable basis for far-infrared spectro-radiometry. Work will include the design of critical spectrometer elements, spectrometer assembly, and the application of far-infrared lasers and optical frequency combs to the precision analysis of spectrometer dispersion and resolving power. Success will require the acquisition and/or application of spectral reference data in order to perform wavelength calibration of spectrometers from 15 μm to 100 μm . Further work will include operating cryogenic systems, performing spectro-radiometer calibrations, and working with infrared blackbody sources and infrared detector arrays to establish traceability.

Key responsibilities will include but are not limited to:

- Design, assembly and/or operation of far-infrared lasers and laser frequency combs.
- Optical design and characterization of dispersive spectrometers.
- Assist with mechanical design of vacuum spectro-radiometer components.
- Measurements of spectrometer throughput using various light sources and detector arrays.
- Analyze data on spectrometer and spectro-radiometer performance.
- Acquire and/or interpret data from molecular spectroscopy.
- Present results at internal meetings and external scientific conferences.

Qualifications

- PhD in Physics, Optics, or a related field.
- <5 years of relevant post-PhD experience.
- Demonstrated experience working with and/or developing optical frequency comb lasers.
- Demonstrated experience performing high-resolution molecular spectroscopy in the infrared.
- Ability to control, operate and automate scientific test equipment and instrumentation.
- Familiarity with design tools like Autodesk Inventor, Zemax OpticStudio, FRED, or similar.
- Familiarity with the programming languages Python, LabVIEW, and Matlab.
- Strong oral and written communication skills.

Applying for the Position

Qualified candidates should submit a letter of interest describing their research background and a CV with complete list of publications to adam.fleisher@nist.gov and solomon.woods@nist.gov. Interested candidates can also apply for this “Far-Infrared Laser Spectroscopy and Spectro-Radiometry” position at <https://prep.umd.edu/> . The work location for this position will be at the NIST campus in Gaithersburg, Maryland.

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 of PREP Program: The National Institute of 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.