**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:**

 [**High Frequency semiconductor-based Transistor Modeling**]

**The work will entail:**

[In conjunction with the National Institute of Standards and Technology, the candidate will develop metrology standards and circuits for the characterization of state-of-the-art transistors up to a 1 THz. Using new instrumentation and commercial software, the candidate will develop and validate transistor models with improved architectures in III-V semiconductor technologies. Characterization will include on-wafer scattering parameter up to 1 THz and nonlinear electrical measurements from [75 – 260] GHz, frequency bands intended to host to high-speed communication beyond 5 and a variety of emerging wireless applications]

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

* DC and RF devices measurements
* Contribute to developing transistor models on the linear and nonlinear behavior of transistors.
* Develop approaches to integrate measurement error and process variation in models.
* Work as a team and with external collaborators to design, integrate, and test mm-wave devices and circuits.
* Studies will result in a series of publications, providing important changes to existing products, processes, techniques, or practices.
* Present technical results.

**Qualifications**

* Bachelor’s degree in Electrical Engineering or Physics
* Basic skills in semiconductor devices
* Ability to master electrical measurement techniques such as: DC characterization, nonlinear network analysis, load-pull, and small and large signal network analysis.
* Ability to operate and adjust instrumentation systems, spectrum and network analyzers.
* Ability to code with, or learn to code with: Matlab, Visual Basic, and Lab View is required.
* Ability to develop simulations in microwave electronics simulation software (e.g. HFSS and ADS) is desirable.
* Must be good with handling small parts

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

Choose of the available options on the following link: [FLCDataCenter.com](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.flcdatacenter.com%2FOesWizardStep2.aspx%3FstateName%3DColorado&data=04%7C01%7CPREPboulder%40nist.gov%7Cb57efe197681406c6ac908d9162ea490%7C2ab5d82fd8fa4797a93e054655c61dec%7C1%7C0%7C637565211849975696%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=pZMCka1XCCRNAyLVe7LrkKoJeZCjLdN98dSIBOf%2F%2FJo%3D&reserved=0).

What title best suits this PREP project and its requirements?

***EXAMPLES OF POSITION DESCRIPTIONS:***

* [**19-2012.00**](http://online.onetcenter.org/link/summary/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](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=19-2012&year=21&source=2)

* [**17-2061.00**](http://online.onetcenter.org/link/summary/17-2061.00)**Computer Hardware Engineers**

Research, design, develop, or test computer or computer-related equipment for commercial, industrial, military, or scientific use. May supervise the manufacturing and installation of computer or computer-related equipment and components.
[View Wages for OES/SOC 17-2062: Computer Hardware Engineers, Non-R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2062&year=21&source=2)

* [**17-2061.00**](http://online.onetcenter.org/link/summary/17-2061.00)**Computer Hardware Engineers**

Research, design, develop, or test computer or computer-related equipment for commercial, industrial, military, or scientific use. May supervise the manufacturing and installation of computer or computer-related equipment and components.
[View Wages for OES/SOC 17-2063: Computer Hardware Engineers, R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2063&year=21&source=2)

* [**17-2071.00**](http://online.onetcenter.org/link/summary/17-2071.00)**Electrical Engineers**

Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.
[View Wages for OES/SOC 17-2073: Electrical Engineers, Non-R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2073&year=21&source=2)

* [**17-2071.00**](http://online.onetcenter.org/link/summary/17-2071.00)**Electrical Engineers**

Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.
[View Wages for OES/SOC 17-2074: Electrical Engineers, R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2074&year=21&source=2)

* [**17-2072.00**](http://online.onetcenter.org/link/summary/17-2072.00)**Electronics Engineers, Except Computer**

Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.
[View Wages for OES/SOC 17-2075: Electronics Engineers, Except Computer, Non-R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2075&year=21&source=2)

* [**17-2072.00**](http://online.onetcenter.org/link/summary/17-2072.00)**Electronics Engineers, Except Computer**

Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.
[View Wages for OES/SOC 17-2076: Electronics Engineers, Except Computer, R&D](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=17-2076&year=21&source=2)

* [**17-2199.07**](http://online.onetcenter.org/link/summary/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](https://www.flcdatacenter.com/JobZone.aspx#4)
[Education & Training Code: No Level Set](https://www.flcdatacenter.com/TrainingCodes.aspx)

* [**19-2099.00**](http://online.onetcenter.org/link/summary/19-2099.00)**Physical Scientists, All Other**

All physical scientists not listed separately.
[View Wages for OES/SOC 19-2099: Physical Scientists, All Other](https://www.flcdatacenter.com/OesQuickResults.aspx?area=14500&code=19-2099&year=21&source=1)

* [**19-2099.01**](http://online.onetcenter.org/link/summary/19-2099.01)**Remote Sensing Scientists and Technologists**

Apply remote sensing principles and methods to analyze data and solve problems in areas such as natural resource management, urban planning, or homeland security. May develop new sensor systems, analytical techniques, or new applications for existing systems.
[O\*Net™ JobZone: 5](https://www.flcdatacenter.com/JobZone.aspx#5)
[Education & Training Code: No Level Set](https://www.flcdatacenter.com/TrainingCodes.aspx)

**Please upload the following (preferably in a single PDF) with your application:**

* Job Description

**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)](https://www.nist.gov/iaao/academic-affairs-office/nist-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.