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: Postdoctoral Researcher in Bioelectronic Sensing

The work will entail:
The Microsystems and Nanotechnology Division at the National Institute of Standards and Technology (NIST), Gaithersburg, MD is searching for postdoctoral researchers who are motivated to develop novel electronic measurements of biomarkers. The development of chip scale assays for the accurate and sensitive measurements of biomarkers is critical to enable transformative point of care applications in personalized health care and drug discovery. To enable such applications, we develop bioelectronics measurements to identify and quantify biomarkers in solution. Our research utilizes CMOS device structures specifically designed and fabricated for biosensing. We are interested in developing robust interfaces to semiconductor devices that utilize DNA nanotechnology as well as other approaches to enable the measurements of nucleic acids, proteins, and small molecules in a modular platform.

U.S. Citizens Preferred

Key responsibilities will include but are not limited to:

Design and assembly of DNA nanostructures.
Development of techniques and validation methods to verify attachment of DNA nanostructures to semiconductor substrates.
Setup and development of instrumentation to support CMOS bioelectronic measurements.
Characterization of biotic-abiotic interfaces and surface chemistry.

Qualifications

A Ph.D. Engineering, Materials Science or a related field.
Two years of relevant experience.
Expertise with electrochemical (e.g., EIS, cyclic voltammetry) or electrical measurements (e.g., capacitance) measurements of DNA nanostructures or DNA by using CMOS detectors.
Experience in nanofabrication techniques and processes.
Data analysis with MATLAB, Mathematica, Python or similar software.
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.