

TITLE: Nanocalorimetry for *In-Situ* Plasma Monitoring (U.S. Citizens Preferred)

Overview

The Materials Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified persons (U.S. Citizens Preferred) to join a multi-disciplinary team of scientists working to advance the current state-of-the-art in nanocalorimetry-based measurements for monitoring of semiconductor manufacturing processes. This individual will work closely with the leaders of this multi-effort project but will personally be responsible for incorporating these novel sensors into a custom plasma chamber and determining their utility for in-situ characterization of plasma-based etching and deposition processes.

Duties

- Design and assemble a custom plasma reactor that integrates NIST-produced nanocalorimetry sensors as well as other common plasma diagnostic tools.
- Perform experiments using a variety of plasma types and conditions relevant for semiconductor manufacturing processes, utilizing nanocalorimetry along with other plasma diagnostic techniques for in-situ monitoring.
- Data interpretation to understand the parameters during plasma processes and assess the feasibility of using nanocalorimetry as a process monitoring technique.
- Publish results in peer reviewed scientific journals and present results at scientific conferences.

Required Skills, Expertise and Qualifications

- Ph.D. in materials science, physics, chemistry, chemical engineering or related field.
- Hands-on expertise in the design and assembly of custom plasma reactors, as well as experience using plasma diagnostic techniques such as Langmuir and optical probes.
- Experience with calorimetry-based measurements of temperature and/or thermal properties of materials.
- Understanding of measurements of radical/ionic fluxes and energy distributions at the substrate level, as well as deep knowledge of plasma-surface interactions.
- Strong written and oral communication skills; ability to work independently and as part of a team.

Employment Terms: This opportunity is to be an associate researcher in the Materials Measurement Science Division for a term of 1 year, with options to renew. Associate researchers are NOT Federal Employees, but they work aside NIST researchers and with NIST's often world class instrumentation. Relocation expenses will not be provided. U.S. Citizens hired into associate positions may have the opportunity to seek longer term Federal Employment.

Salary: \$90,000 to \$95,000

How to express interest: Persons (U.S. Citizens Preferred) who meet all of the required qualifications and who would be interested in taking this position are invited to express their interest by sending an email that briefly describes their qualifications along with a CV to 643assoc@nist.gov. US Citizens should note "US Citizen" and the opportunity title in the email subject line. All others should note "Non-US Citizen" and the opportunity title in the email subject line.