

## MML Model Opportunity Description

TITLE: Nanometer-Scale Planar Reference Materials (U.S. Citizens Preferred)

### Overview

The Material Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified persons (U.S. Citizens preferred) to join a team of researchers within the NIST/CHIPS Nanometer-Scale Planar Reference Materials project working with advanced metrology methods to characterize local physical and chemical properties and map any variation in these properties of thin, nanometer-scale films deposited on Si (and SiC) wafers. The candidate will measure and analyze these wafers using X-ray and optical methods to determine, through hybrid metrology, structural maps for wafers with thin films of interest to the semiconductor community.

### Duties

- Plan and conduct research on advanced X-ray metrologies to determine structural (physical and chemical) properties of blanket (non-patterned) thin films on Si and SiC wafers
- Use lab-based and synchrotron X-ray characterization methods, to determine the structural properties of thin film samples
- Use open-source (python) fitting methods to constrain structural models, determine uncertainties, and combine these properties into a hybrid metrology digital wafer
- Perform wafer dicing, cleaning, and packaging of samples for distribution as Research Grade Test Materials
- Publish results in archival scientific journals and present results at topical meetings

### Required Skills, Expertise and Qualifications

- Ph. D in physics, materials science, or another related field
- Background in X-ray measurement technique(s) required, either:
  - X-ray reflectivity, X-ray fluorescence, or X-ray photoelectron spectroscopy
- Background in programming and/or data modeling using python recommended.
- Familiarity with thin film deposition and clean room access protocols, preferred
- Strong oral and written communication skills

Employment Terms: This opportunity is for an associate researcher in the NIST Materials Measurement Science Division for a term of one year, with options to renew. Associate researchers are NOT Federal Employees, but they work along with 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: \$85,447-\$88,500

How to express interest: Persons (US 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](mailto:643assoc@nist.gov). U.S. 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.