TITLE: Numerical modeling for nano-to-microscale thermo-mechanical measurements (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 perform finite element analysis and simulations related to nanoscale and microscale material property measurements based on atomic force microscopy and instrumented indentation. This work will focus primarily on numerical modeling of nanoscale and microscale thermomechanical tests on materials and heterogeneous structures used in advanced packaging of microelectronics.

Duties

- Perform finite element analyses to model the thermo-mechanical behavior of materials and structures at the micro- and nano-scale
- Research and develop theoretical models for the analysis of temperature-dependent micro/nanomechanical behavior of materials and heterogeneous structures at elevated temperatures. As needed, refine these models based on data from AFM and nanoindentation experiments.
- Publish results in peer reviewed scientific journals and present results at scientific conferences.

Required Skills, Expertise and Qualifications

- PhD in Materials Science or related field.
- Advanced knowledge and experience with finite element methods/multiscale modelling, particularly related to nano/microscale contact mechanics. Experience writing software and/or using python scripting to speed up/automate simulation workflows.
- Experience with computational materials research, particularly in the validation of experimental results or extraction of materials properties from complex experimental data.
- Knowledge of AFM and/or nanoindentation experiments. Hands on experience preferred.
- Knowledge of materials commonly used in BEOL layers and interconnects of microelectronic devices, particularly those used in hybrid bonding processes.
- 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: $80,000 to $90,000

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.