

TITLE: Theoretical and Computational Studies of Heat Transport (U.S. Citizens Preferred)

Overview

The Material Measurement Laboratory of the National Institute of Standards and Technology is seeking qualified candidates (U.S. Citizens preferred) to perform theoretical and computational studies of heat transport in nanoscale thermal junctions, including thin semiconductor films. This position centers on advancing nanoscale heat-transport science and converting it into practical engineering outcomes. The work is fast-paced, collaborative, and integrated with ongoing research across a premier federal research institution.

Duties

- Design and perform molecular dynamics simulations of heat transport in nanoscale semiconductors.
- Characterize vibrational properties of atoms in crystals using density functional theory.
- Parameterize and solve Boltzmann Transport Equation (BTE) to describe heat transport.
- Use theoretical knowledge of solid state physics to interpret simulated data.
- Work independently to address scientific challenges and contribute to reports, manuscripts, and conference presentations.

Required Skills, Expertise and Qualifications

- A PhD in solid state physics or related field.
- Expertise in using molecular dynamics to simulate heat transport in crystalline solids.
- Expertise in calculating atomic vibrational properties using density functional theory.
- Expertise in parameterizing and using BTE to study heat transport in nanostructures.

Other Desirable Qualifications

- Experience with finite element modeling tools (e.g., COMSOL).
- Experience in electron band structure calculations for semiconductors.
- Interest in applying Machine Learning / Artificial Intelligence to predict heat transport properties.
- Excellent technical writing and oral communication skills.

Employment Terms:

This opportunity is to be an associate researcher in the NIST Applied Chemicals and Materials Division for a term of 1 year, with options to renew. Associate researchers are NOT Federal Employees, but they work as 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-\$92,000

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 647assoc@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.