

Multiscale Modelling of Quantum Dot Thermoelectrics



Dr. Nirat Ray
Department of Materials
Science and Engineering

- Research Interests**
- First-principles design Based Designer Solids and Nanocomposites
 - Synthesis and Characterization of Nanomaterial
 - Electron Beam Lithography
 - Electronic Charge Transport and Optical Properties
 - Molecular Organic Semiconductors and Device Applications
 - Magnetic Nanowires and Magnetic Tunnel Junctions for Spintronics



Dr. Sushma Santapuri
Department of Applied
Mechanics

- Research Interests**
- Mathematical modeling of functional/smart/advanced materials
 - Electrodynamics of continua
 - Asymptotic theories for smart composite structures, plate theories
 - Thermodynamics of functional materials
 - Multiferroic materials and their applications
 - Finite element analysis of smart structures

Thermoelectric devices offer the ability to generate useful electrical work directly from heat. Hence thermoelectrics are of a particular interest as a waste energy harvesting device. Multiscale optimization of thermoelectric materials has demonstrated to have a remarkable improvement in the performance of devices. Aim of the project is to model different structural and electronic modification in thermoelectric materials using computational methods.



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