SACRAMENTO STATE

Department of Physics & Astronomy Fall 2007

Physics Colloquium Series

"Nanoscale Devices for Thermo-electric Energy Conversion"

Energy consumption in our society is increasing rapidly. A significant fraction of the energy is lost in the form of heat. In this talk we introduce solid-state devices that allow direct conversion of heat into electricity. We describe fundamental and practical limits of conventional thermoelectric power generation. Novel metal-semiconductor nanocomposites are developed where the heat and charge transport are modified at the atomic level. Potential to reach high power densities and high conversion efficiencies will be discussed. We also describe how similar principles can be used to make micro refrigerators on a chip and remove hot spots in integrated circuits.

Dr. Ali Shakouri

Baskin School of Engineering, UC Santa Cruz

Thursday, November 8, 2007
4:00-5:20 PM MND 1015

Open & Free to all Students, Faculty & Public