MONTANA STATE UNIVERSITY

Physics Colloquium

Friday April 9th, 2010
4:10 – 5:00pm, EPS 108

"Thermoelectric Materials for Power Generation and Refrigeration"

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Abstract:
Thermoelectric materials offer great promise for alternative energy applications. Thermoelectric generators can be used to harvest waste heat, such as that from the exhaust of an automobile. They also can collect solar thermal energy and convert it into electricity or be used for applications in refrigeration and cooling. Advanced materials with high Seebeck coefficient and high electrical conductivity along with low thermal conductivity make the most efficient thermoelectric devices. Our work on single crystal rutile TiO2 reveals colossal positive Seebeck coefficients, which may be attributed to phonon drag effects. Furthermore, a significant reduction in the thermal conductivity, due to phonon scattering by defect planes, and less effective scattering of electrons by these planes, lead to an efficient thermoelectric.

Host:
John Neumeier

Refreshments 3:45 p.m. 2nd Floor Atrium EPS