

平成 22 年 8 月 3 日

応用物理学会北海道支部
会員各位

応用物理学会北海道支部講演会のお知らせ

下記講演会を開催いたしますので、多数ご参加下さいますようお願い申し上げます。

演題： Heat Conduction at the Nanoscale: State of the Art and Challenges

講師： Prof. Sebastian Volz 氏

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日時： 平成 22 年 8 月 9 日（月） 13:00～14:30

場所： 北海道大学工学部物理工学系会議室 1 （A3-62）

主催： 応用物理学会北海道支部

講演の要旨

Heat conduction in solids relies on the transfer of atomic vibrational energy which quantization allows for the definition of quasi-particles called phonons. Fourier’s Law is valid when phonon wave packets are transported according to a diffusive regime throughout the system. In other words the governing mechanism is the interaction between phonons. When the system shrinks to sizes on the order of the phonon mean free path, the phonon-surface (or interface) scattering becomes predominant and when those sizes further shrink to the thermal phonon wavelength range (a few nanometers), mode confinement is yielded. Those size effects are strongly affecting the heat flux. We develop case studies proving the relevance of phonon engineering through nanostructuration to control thermophysical properties for insulation, thermoelectricity, thermal management of microdevices. Heat conduction in nanoobjects such as dots, wires, films, superlattices and carbon nanotubes will be detailed.

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