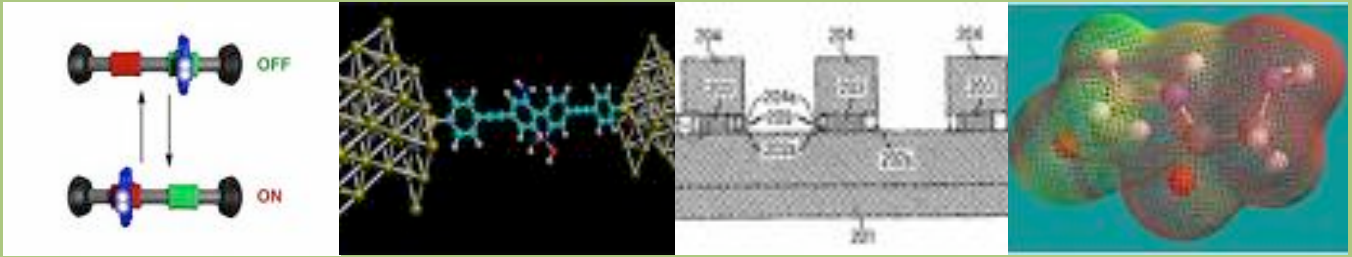


NCKU R&D FORUM

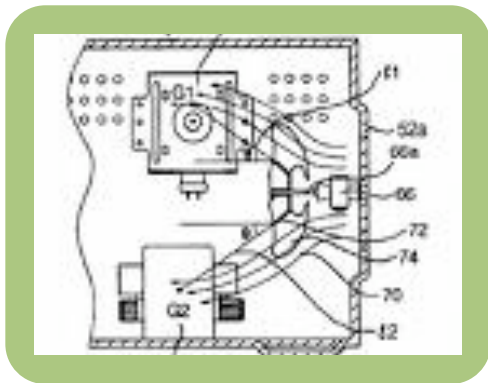
研 發 論 壇



2008年4月25日 12.00-14.00 雲平大樓四樓第一會議室與您有約

Molecular Fan for Radiative Cooling of Nanoelectronic Devices

By Dr. Chhiu-Tsu Lin



In this forum, the radiative cooling in relation to lattice quantization and surface emissivity in

nanocoatings

will be presented in details. Nanodiamond (NDP), carbon nanotube (MWCNT), and carbon black (CB) were dispersed separately in the nanosize acrylate emulsion (AC) to form a nanocoating on heat-sinks. The active phonons of the nanomaterials were designed to act as a molecular cooling fan, termed "molecular fan - MF". The MF coating was shown to have an enhanced surface emissivity which is well-correlated to the lattice quantization with the order of MWCNT > CB > NDP, whereas thermal conductivity follows the order of NDP > MWCNT > CB. The equilibrium temperature lowering of the coated heat-sink was measured as 17 °C for MWCNT molecular fan, and can be attributed to the excited phonons that emit IR radiation to cool the heat-sinks.

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Research Interests

Molecular electronic spectroscopy; biophysical chemistry; lasers and their chemical applications for better materials science.

時間: 2008年4月25日星期五

地點: 雲平大樓四樓第一會議室

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