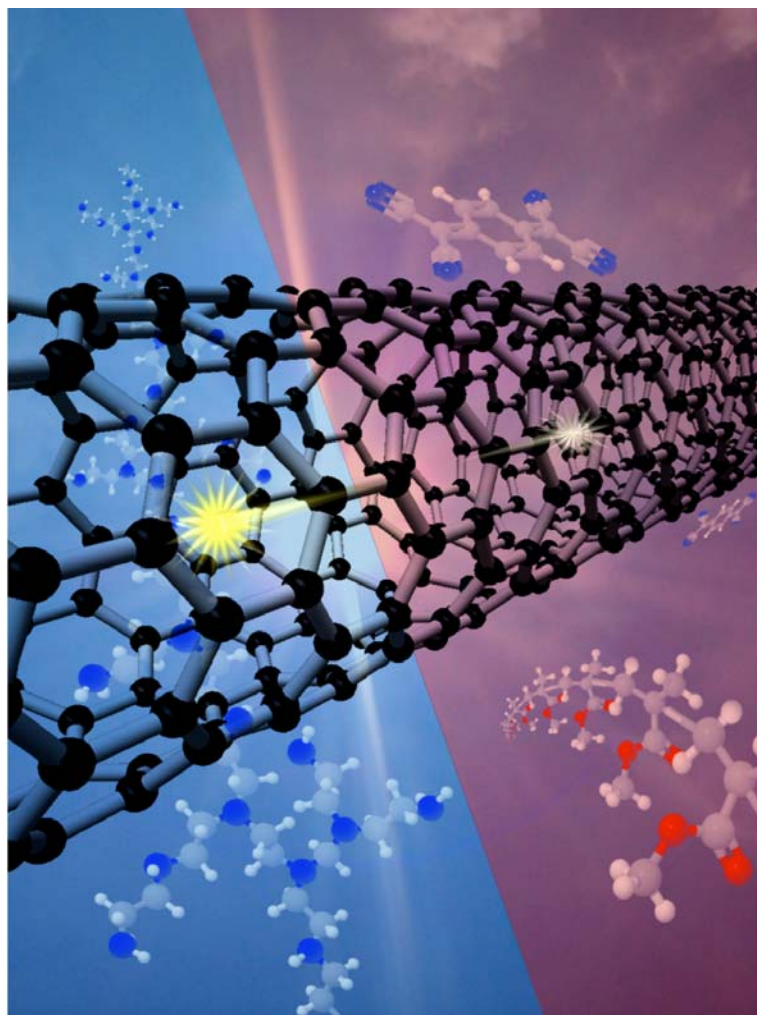


NANO HOUR

Wednesday, October 29, 2008
SPECIAL TIME - 4:15 PM
Beckman Institute - Room 3269

Charging and Charge Separation in Carbon Nanotubes: Insights with polymer electrolytes

**Prof. Moonsub Shim – Department of Materials Science
and Engineering**



High carrier mobilities and current carrying capacities combined with mechanical robustness have generated much interest in carbon nanotubes. Yet many challenges remain in exploiting these exceptional properties due to difficulties in sorting out inherent properties from those altered by variations in the local chemical environment. Hence even fundamental questions such as how a nanotube responds to charging (carrier injection or localized external charges) are difficult to address. Polymer electrolytes surrounding individual nanotubes are utilized to screen out many of the undesired effects and to apply electrochemical potential. These studies along with Raman measurements provide insights on charging and charge separation in carbon nanotubes. In metallic tubes, environment-sensitivity, electron-phonon coupling, and how these factors contribute to a large distribution of observed properties will be discussed. In

semiconducting tubes, environment-sensitive properties are exploited along with polymer electrolytes leading to a facile route to spatially modulated doping for nearly ideal p-n diodes.

Coffee, tea and cookies will be served.

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