

# Joint CQSE and CASTS Seminar

Weekly Seminar  
Jan. 4, 2013 (Friday)

TIME Jan. 4, 14:30 ~ 15:30  
TITLE Conductance Modulation of CNT-based Nano-Electronics  
SPEAKER Prof. Elise Yu-Tzu Li  
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PLACE Rm716, CCMS & New Physics Building, NTU

## Abstract

We study the effect of chemical modifications on electron transport of CNT-based nano-electronics. In the first part, we propose several covalent functionalizations for carbon nanotubes that display switchable on/off conductance in metallic tubes. The switching action is achieved by reversible control of bond-cleavage chemistry in [1t2] cycloadditions via the  $sp^3$  to  $sp^2$  rehybridization that it induces; this leads to remarkable changes of conductance even at very low degrees of functionalization. In the second part of the talk, we address the issue of low electrical conductivity observed in carbon nanotube networks using first-principles calculations. We explore the possibility of improving intertube coupling and enhance electrical tunneling by transition metal adsorption.

