On metallic nanostructures, plasmons exist in the form of resonant charge oscillations. With metal nanostructures placed close together, plasmon resonances lead to strong electric fields localized in the gap region. These resonances are highly dependent on the size of the gaps. For instance, smaller gaps (sub-10-nm) are expected to yield more intense fields and larger energy splits between the “bonding” and “anti-bonding” plasmon modes than larger gaps. These plasmonic nanostructures find use in coupling light in and out of molecular materials, e.g., in high sensitivity molecular spectroscopy with surface-enhanced Raman scattering (SERS). In this talk we will discuss the fabrication of plasmonic nanostructures with gaps as small as 0.5 nm. We will discuss also the electron energy-loss spectroscopy (EELS) method used in testing the plasmonic responses of these structures by locally and electrically exciting the plasmons.

CBC SEMINAR ANNOUNCEMENT

Dr Joel Yang Kwang Wei
Institute of Materials Research and Engineering

Sub-10-nm Plasmonics

Date: 16th November 2011 (Wednesday)
Time: 11am – 12.30pm
Venue: NTU SPMS CBC Building Level 2, Conference Room
Host: Asst Professor Ling Xing Yi