



THE CHINESE UNIVERSITY OF HONG KONG

Department of Physics

COLLOQUIUM

Dynamics Study at Nanoscale: Surface Chirality Manipulation and Motion Control of Nanomechanical Resonators

by

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Date: March 5, 2010 (Friday)

Time: 4:00 - 5:00 p.m.

Place: L2, Science Centre, CUHK

(Light refreshments will be served 20 minutes prior to the colloquium.)

ALL INTERESTED ARE WELCOME

Abstract

Two dynamic systems at nanoscale will be presented. First, expression of a particular chirality (handedness) from a mixed enantiomer system is examined at single molecule level. Several complementary techniques (LEED, RAIRS, STM, DFT, and KMC) are used to reveal the mechanism driving the creation of single-handedness in the superstructure of tartaric acid on Cu(110) surface from two non-interconvertible enantiomers via enantiomeric imbalance. This study is one step towards the understanding of homochirality found in natural biological and chemical systems.

Nanoelectromechanical systems (NEMS) have shown great promise in applications such as mass sensing, timing and frequency control as well as mechanical computation. A time-resolved optical approach to the transduction of ultrahigh frequency (up to 1 GHz) NEMS of the size of a few hundreds of nanometers is presented. Coherent control of oscillation amplitude of these resonators is demonstrated through appropriate excitation pulse programming.

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