

**Center for Quantum Science and Engineering (CQSE)
&
National Center of Theoretical Sciences (NCTS)**

**Joint Seminar
April 2, 2010 (Friday)**

Time: April 2, 2:30pm ~ 3:30pm
Title: Mixing and Bio-reaction in Microfluidic Devices
Speaker: Dr. Jing-Tang Yang 楊鏡堂
Dept of Mechanical Engineering, National Taiwan University
Place: Rm716, CCMS & New Physics Building, NTU

Abstract

The notion of microfluidic systems has profoundly become ingrained in analytical chemistry and life science. Because of its large ratio of surface to volume, a microfluidic device plays an important role in manipulating fluids arbitrarily on a micrometer scale and hence possesses diverse applications, great potential and advantages of small consumption of samples, parallel handling and precise rapid detection. These miniature devices or systems are extensively applied in protein detection, blood typing, organic syntheses, and catalytic reactions that attract much effort and attention.

The main themes of the speech comprise how we realized novel micromixers/microreactors with high performance and simple fabrication, and proffering original measuring techniques, design notions, analytical methods, and insightful viewpoints. The measurement techniques developed for investigating the flow and concentration fields within the microfluidic elements, such as micro-PIV, confocal microscopy, FRET, particle-counting method, will be presented in the speech. Finally, the bio-reaction tests including hybridization/conjugation of two complimentary DNAs and functionalized gold nano-particles (Au-NPs) in intentional reaction devices are reported. It is hoped that, through the presentation of this research case, our audiences could be inspired by the notion of this research and invent or initiate their own foresighted research.

