

# Chemical Engineering Seminars – HT 2010

*Week 6, Tuesday February 23<sup>rd</sup> 2009, 4:00PM-5:00PM  
Lecture Room 3, Thom Building, Engineering Science*

## **MicroFluidics and Its Applications**

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### ***Abstract***

Microfluidics coupled with MEMS and Hydrodynamics has rapidly expanded beyond flow control applications. The technological interest in microfluidics has been significant during the past decade following rapidly evolving the field of lab-on-a-chip. The monolithic platform is often integrated with pumps, valves, fluid manifolds and microchannel networks.

This talk presents the utilization of microscale benefits obtained in a microchannel flow. It introduces size-selective particle separations using a secondary flow, the fabrication of micro/nano capsules using hydrodynamic instability and drag reduction using the surface attachment of microbubbles. Most of them are unfavorable in the hydrodynamic situation. Specifically, the secondary flow is generally negligible and unfavorable in conventional pipe flow since it is a relatively minor flow imposed on the primary flow and is considered as being the loss of momentum and energy. However, the secondary flow generated in a curved rectangular microchannel can be used favorably to separate and sort micro/nano particles by size. This talk also aims to explore a research content for collaboration in the University of Oxford.

### ***Biography***

Jeung Sang Go received a B.S. degree in 1993 in Pusan National University, a M.S. degree in 1995 and Ph.D. Degree in 2001 from Korean Advanced Institute of Science and Technology, South Korea. His major research field was micro heat transfer linking with MEMS. Beginning from 2000, he had been working at the Samsung Advanced Institute of Technology in Korea for the development of MicroCooling Systems. He started a new research on the microfluidic devices for the use of biotechnology. He joined the Waseda University in 2002. He had performed research on Micro and Nano biochemical system. In 2004, he was employed in the Pusan National University as an assistant professor of Faculty of Engineering till 2007. He is currently working at the Pusan National University as an associate professor. His research interests include the micro/nano capsule fabrication, the micro-thermo-fluidics and bio/physical sensor fabrication.