FUNCTIONAL BUBBLES FOR MICRO OBJECT MANIPULATION AND PROPULSION

Dr. Sung Kwon Cho
Department of Mechanical and Materials Science Engineering
University of Pittsburgh

Abstract

Bubbles are ubiquitous in everyday life. Since the emergence of microfluidic technology, micro bubbles have been attracting much more attention bringing out interesting scientific/engineering research topics and spawning practical applications. In this talk, various functional operations of micro bubbles are presented along with underlying scientific issues. First, the talk begins with fundamental bubble operations including transporting, splitting, merging, creating, and eliminating of microbubbles on a microchip. Then, the talk switches gears to advanced operations in which oscillating bubbles manipulate (capture, carry, and release) micro/mini objects in 2-D and 3-D spaces. Finally, the talk presents propulsion principles using micro bubbles (interfaces), which can be applied to underwater and water-floating micro/mini swimming robots.

Speaker's Biographical Sketch

Sung Kwon Cho is an Associate Professor of Mechanical and Materials Science Engineering at the University of Pittsburgh. From 199-2003 he was a post-doctoral student at the University of California, Los Angeles. Dr. Cho received his PhD in 1998, his MS in 1992, and his BS in 1990, all from Seoul National University. His research interests are in micro/nano fluidics and MEMS.

DATE: Wednesday, October 14, 2009

TIME: noon – 1 pm

LOCATION: 424 Benedum Hall