

Acoustically Activated Microfluidic Manipulations

GUEST SPEAKER

Prof Jon Cooper

University of Glasgow

When: **14th June 2010, 3.00 p.m. to 4.00 p.m.**

Where: **Level 2 Auditorium, Institute of Microelectronics, Singapore**
11 Science Park Road Singapore Science Park II Singapore 117685

Abstract

The development of microfluidic systems is often constrained both by difficulties associated with the chip interconnection to other instruments and by mechanisms that can enable fluid movement and processing. Surface acoustic wave (SAW) devices have previously shown promise in allowing samples to be manipulated, although designing complex fluid manipulations involves mixed signal generation at multiple electrode transducers. We now demonstrate a simple interface between a piezoelectric SAW device and a disposable microfluidic chip, patterned with structures to shape the acoustic field. The surface wave is coupled from the piezoelectric substrate into the disposable chip to allow fluid actuations, including droplet movement, splitting, jetting, nebulisation and centrifugation to be performed. We show that the interaction of the fluid within the chip structure is dependent upon the frequency of the acoustic wave, providing a method to programme complex fluidic functions into a microchip.

Speaker Biography



Prof Jon Cooper holds the Wolfson Chair in Bioengineering. He has developed a range of technologies associated with Lab-on-a-Chip for diagnostics, cell measurements and proteomics. The primary focus of his work has been the demonstration of the analytical advantages of studying biological systems at the micro- and nanoscale. He has strong collaborations with the Beatson (in cell based arrays for cancer research) and with the BHF (in developing new tools for drug discovery in heart disease). He has also been closely involved in the commercialisation of chip based diagnostic devices for the detection of bowel cancer (www.modedx.com). Prof Cooper was elected as a Fellow of the Royal Society of Edinburgh in 2001 and a Fellow of the Royal Academy of Engineering in 2004. Prof Cooper's work is recognised by invited lectures at leading conferences. He has published ca. 175 papers in the field.

Registration

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