



Friday, February 24th, 2012, 11:00 A.M.

Room No. 114, School of Mechatronics 1st Floor

(Host: Prof. Sung Yang / Language: English)

Microfluidic Lab-on-a-chip for Point-of-Care Testing: A Platform

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Lab-on-a-chips (LOCs) are microfabricated devices designed for various types of biochemical and cellular analysis. LOCs can be classified either as microfluidic, based on micro-channel networks or as microarrays, based on microtiter plate-type formats or microchips. Micro-total analytical systems (μ TAS) are LOCs that combine microfluidics with electronics, sensors, and other components that enable them to perform a complete analysis or synthesis on a single unit. Some systems are capable of separating and analyzing individual constituents from whole blood. Common fluids used in microfluidic devices can include blood samples, bacterial cell suspensions, isolated DNA or RNA, protein or antibody solutions and various buffers, as well as analytes for chemical synthesis or environmental testing. LOCs can be used to obtain a broad spectrum of measurements, including molecular diffusion coefficients, pH, fluid viscosity, enzyme reaction kinetics, chemical binding coefficients, and chemical analysis.

Since the initiation of microfluidics, the technology has gained importance in the healthcare business with response to the immense growth in the areas of high-throughput screening of drug discovery, point-of-care Testing (POCT), etc. POCT is defined in this study as professional-grade in-vitro diagnostic (IVD) tests completed in close proximity to patients. By performing diagnostic tests closer to patients and obtaining results directly at the point of care, primary care providers can immediately diagnose and treat patients for improved outcomes. The convenience and speed of POCT are typically the most attractive features that stimulate market growth. The opportunities

in this field remain vast for industry participants to capitalize on the growing demand for POCT. In the presentation we will deliver the broad spectrum of microfluidic technology, especially focused on LOC and its format to use for POCT.