

NANO-BIO SEMINAR

BioMEMS and Microfluidics for Clinical Diagnostics and Detection

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Indian Institute of Technology Kanpur, India

Friday, July 1, 2011, 11 am, NH 202

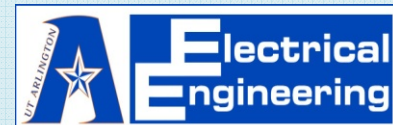
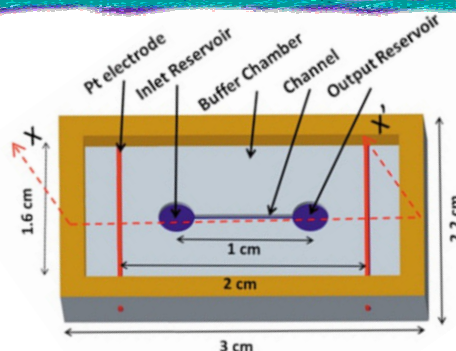
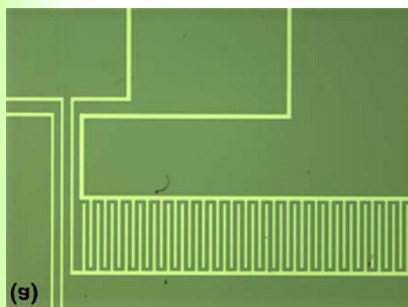
Abstract: Miniaturization technology starting with the famous talk by Sir Richard Feynman, "There is plenty of room at the bottom" has led to the mimicking and realization of newer phenomena both physiological and physical at the micro and nano scales. The advantages that miniaturization offers is the realization of physical systems at scales and dimensions similar to biological entities such as bacterial and mammalian cells, viruses, spores, etc. which further leads to enhancement in our capabilities to mimic biological systems with better sensing capabilities, accuracy of physical manipulation and control.

We have used micro-architectures to exclusively study the behavior of biological entities like bacterial cells, DNA etc. I would be reviewing some of the research in this direction done by our group. The areas are focused to the design and development of an integrated bacterial detection system, surface electrophoresis of ds-DNA across orthogonally intersecting surfaces, microscale transport and pumping of biological fluids through arrays of micro-channels and arrays and designing and development of anti-vibration pads with embedded microchannel arrays.



Speaker: Dr. Bhattacharya is an Assistant Professor of Mechanical Engineering at IIT-Kanpur, since 2006. He received his MS from Texas Tech in 2003 and earned his doctorate from University of Missouri, Columbia in 2006. Before moving to India, he spent about a year at Birck Nanotechnology Center, Purdue University, West Lafayette, Indiana as a Post-doctoral Research Associate. Dr. Bhattacharya pioneered the surface wettability studies of polydimethylsiloxane (PDMS) and glass which has garnered new dimensions in the areas of oxygen-plasma treatment of surfaces. With over \$1M funding from Indian and US sources, he has developed strong thrusts at IIT-Kanpur spanning nucleic acid analysis, surface electrophoresis, micromixers for microfluidics, and cell trap devices. He has 4 US and 2 Indian patents. He has authored more than 30 journal papers, a number of review articles and has written a book. He serves on Editorial Board of the Journal of Green Nanotechnology.

Dr. Bhattacharya is an Honorary Fellow of the Institute of High Energetic Materials, Melbourne. He has also received Young Engineers Award from the Institution of Engineers (India), as well as Boeing Outstanding Leadership certificate.



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