Northeastern University
College *of* Engineering

Please join us for a

Special Chemical Engineering and Bioengineering Seminar

Wednesday, October 16, 2013
108 Snell Engineering
11:45 am – 1:00 pm

"Microfluidic Devices for Chemical and Particle Analysis"

Mark Burns, Ph.D.
T.C. Chang Professor of Engineering
Chair and Professor of Chemical Engineering
Professor of Biomedical Engineering
University of Michigan, Ann Arbor, MI 48109

ABSTRACT

The field of microfluidics is uniquely poised to make a broad impact in a variety of markets through the miniaturization and massive parallelization of assays and sensors. For example, future advances in microfluidics could revolutionize disease diagnosis, drug discovery, and water quality monitoring. In our work, we focus on components and integrated systems that can be used in chemical and biochemical analysis. Construction of such systems is currently relatively easy; there are a large number of published "lab on a chip" systems constructed from a variety of substrates using different actuation, sensing, and control components. However, there are still relatively few microfluidic diagnostic systems commercially available. Although there are many reasons, possible explanations for this scarcity include the complex interconnect and packaging requirements of many pneumatically actuated analysis chips. Also, while the device itself may be relatively inexpensive, the external optical and electronic components that are necessary to run many complex microfluidic devices tend to negate the economic advantage of the devices. In my talk, I will describe various components that we hope will enable the construction of inexpensive chemical analysis systems. I will also describe some of our integrated devices that can perform such analysis with minimal external equipment.

BIOGRAPHY: Dr. Mark Burns is T. C. Chang Professor of Engineering and Chair of the Chemical Engineering Department at the University of Michigan. He joined the University of Michigan in 1990 after teaching at the University of Massachusetts for 4 years. He obtained his MS and PhD in Chemical and Biochemical Engineering from the University of Pennsylvania, and his BS from the University of Notre Dame.

Prof. Burns has over 150 publications and patents, and he is a licensed professional engineer and a Fellow of the American Institute for Medical and Biological Engineering. He has won numerous awards including an Engineering Initiation Award from the National Science Foundation, and both a Research Excellence Award and a Teaching Excellence Award from the College of Engineering at the University of Michigan. He was the founding director of an Institutional Training Grant from the National Institutes of Health on Microfluidics in Biomedical Sciences, a program that involves 40 faculty from 14 different departments from across the University and is the only one of its kind in the country. Prof. Burns also was one of the co---founders of the innovative seed---funding program at UM called MCubed and currently serves as the chair of the MCubed Executive Committee.

Refreshments will be served.