

Professor J. Michael Ramsey

University of North Carolina, Chapel Hill

Joint Analytical & Chem Bio Seminar

*“Micro- and
Nanofabricated
Devices for
Elucidating
Chemical and
Biochemical
Information”*



The first demonstration of micromachined devices that emulate the functions of laboratory chemical instrumentation, i.e., the silicon gas chromatograph (GC), is now over three decades old. Due largely to the modest performance of these early devices, further

developments in MEMS-based chemical instrumentation were slow to materialize. Micro-fabricated fluidic devices that accomplished chemical measurement strategies were first reported in the early 1990s and have several demonstrated advantages over conventional approaches. Our laboratory has been involved in developing micro-fabricated fluidic devices for two decades. Our more recent efforts have included the development of two-dimensional separation systems coupled to integrated electrospray ionization emitters for proteomic analyses and devices for clinical diagnostic assays that perform flow cytometry, antibody assays, or genetic analysis. We have also been interested in shrinking fabricated fluidic structure to the nanoscale for characterization of individual molecules. One application of such nanofluidic technologies is the rapid sequencing of individual DNA molecules to address health care issues such as personalized medicine. Additionally, we have been investigating the prospects of miniaturizing mass spectrometry for applications ranging from environmental monitoring to clinical diagnostic applications. A limited overview of our activities will be presented.

**Thursday
October 13, 2011**

12:15 p.m.

**Seminar Hall
(1315 Chemistry)**