



“Miniaturized Mass Spectrometers”

SAVE THE DATE!!! You have been invited to the *Electrical and Computer Engineering Seminar Series* on **Friday, March 21, 2014**. Find details of the presentation below.

When: Friday, March 21, 2014

Time: 10:00 AM - 11:00 AM

Where: FIU Engineering Center, EC 1115

Contact: 305-348-2807

Map: <http://campusmaps.fiu.edu/>

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ABSTRACT

There is a growing need for a suite of low-power hand-held chemical analyzers for applications ranging from in-situ detection such as airport security, tactical situations, and firefighting scenarios to long-term environmental monitoring in remote locations and industry process evaluation in un-safe conditions. Mass spectrometers (MSs) are very powerful and versatile instruments that can be used to analyze unknown compounds and typical MS form-factor ranges from a room-sized high performance instruments to analyze DNA and proteins to in-situ portable versions tailored to expedite decision making in time-critical and hazardous situations. There has been a considerable effort towards miniaturization of MSs in order to expand and diversify the application base, not feasible before with the larger-scale counterparts. This talk discusses the miniaturization approach that has been adopted for developing radically miniaturized low-power hand-held ion trap mass spectrometers. The talk is a good mix of fabrication techniques of different components of the ion trap MS and conveys the overall strategy towards developing a handheld broad-range chemical sensor.

BIOGRAPHY

Ashish Chaudhary received B.E. degree in electrical engineering (EE) from C. R. State College of Engineering, Haryana, India in 2001, and M.S. in EE from University of South Florida (USF) in 2004 and is currently pursuing Ph.D. from USF in EE. In 2004, he started working as a MEMS research engineer at Center for Ocean Technology at USF St. Petersburg. His primary job responsibility was to develop micromaching processes to build miniature ion trap arrays in Silicon towards miniaturization of ion trap mass spectrometers (MS). From April 2007, he has been with SRI International as research engineer. At SRI, he expanded his job responsibilities beyond MEMS implementation and had hands-on-experience with the operation and testing of MS system. His area of interests includes extreme miniaturization of mass spectrometer components using MEMS technology and expanding the application base for such a sensor beyond conventional applications. He has been working on optimization of micro-cylindrical ion trap arrays and development of matched electron source for dedicated ionization in each trap of the array. More recently, he's interested in exploring design alterations that will be required to deploy a micro-MS in LEO/outer space.