

George Y. Yu, Ph.D.

EDUCATION

Ph.D in Electrical Engineering
Minor in Chemistry

Georgia Institute of Technology 2004 - 2008

Thesis: *Development of Magnetic Quartz Crystal Microbalance*

Advisor: Dr. Jiri (Art) Janata

Creation of new instrument for in-situ magnetic property measurement during chemical gas exposure using quartz crystal microbalance.

M.S. in Electrical Engineering

Georgia Institute of Technology 2004 - 2007

B.S. in Electrical Engineering
Operations Management Certificate

Georgia Institute of Technology 2000 - 2004

Senior Design Project: Development of a high resolution head and torso orientation sensor system

Other Research: Detection of Rogue Wireless AP using Temporal Traffic Characteristics

EXPERIENCE

CEO, Variable Technologies LLC

Chattanooga, TN

2009 - Present

- Design and fabrication of 2nd generation iPhone/iPod based instrumentation for chemical gas sensing.

Visiting Assistant Professor, University of Tennessee
Chattanooga

Chattanooga, TN

2010 - Present

- Collaborative research on instrumentation.

Contractor for NASA Ames

Chattanooga, TN

2008 - 2009

- Design and fabrication of a miniature synthetic jet for their chemical sensing system.
- Design and construction of an eight channel ChemFET sensor system to test the synthetic jet.
- Design and construction of iPhone based miniature chemical sensor system integrated with the synthetic jet.
- Creation of a custom iPhone application to communicate with sensor device via audio port and display data on iPhone.

CEO, Genel Systems Inc.

Atlanta, GA

2007 - Present

- Managing a startup company to pursue an electrochemical DNA hybridization array.
- Writing SBIR, STTR, and other proposals for funding.
- Acquiring seed money from state of Georgia's Venture Lab program.
- Preparing and overseeing patent applications.
- Develop the electrochemical DNA microchip and supporting hardware/software.

Graduate Research Assistant, Georgia Tech

Atlanta, GA

2005 - 2008

- Developing a new instrument call Magnetic Quartz Crystal Microbalance
- Discovered proximity effect of quartz crystal resonators
- Investigated enhanced response time of chemical sensor (ChemFET) using diffusion modeling.
- Investigated use of doped Polyaniline fiber as a sensing wire.

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Robotics Course Project, Georgia Tech Programmed a Pioneer 2-DXE Mobile robot to roam a room and mapping out the space using ultrasonic distance sensors.	Atlanta, GA	Spring 2006
Graduate Teaching Assistant, Georgia Tech Worked as a general TA to help electrical engineering undergraduates with any course problems and homeworks.	Atlanta, GA	2004 - 2005
Internship, Bearingpoint Consulting Processing paper work and creating documents for the consultants. Social with clients and other consultants.	Shanghai, China	Summer 2004
Electronics Consulting, Chemistry Dept, Georgia Tech Designing a high precision circuit and LabView software to interface with Dr. Janata's group's chemical FET sensors.	Atlanta, GA	2003 - 2004
Undergraduate Research Assistant, Georgia Tech Analysis of traffic characteristics between wired and wireless mediums to create an easy method for detecting unauthorized access points in a network.	Atlanta, GA	2003 - 2004
Internship, M.D. Anderson Cancer Center Programming in LabView to automatically correct gamma ray sensor misalignment which resulted in reduction of manual correction time from 6 month to automatic correction time of 2 days	Houston, TX	Summer 2003
Undergraduate Research Assistant, Georgia Tech Worked on IEEE 802.11b based wireless VoIP solution. Although it was not successful, much were learned about network traffic and network programming.	Atlanta, GA	2002 - 2003
Study Abroad, Georgia Tech Lorraine	Metz, France	Summer 2002

- References Available Upon Request -

SKILLS - SOFTWARE

Computer Platforms: MS Windows, Mac OS X, Linux Redhat

Programming Languages: iPhone SDK, Objective-C, LabView (GPIB, VISA, DAQ), Java, C++, Assembly, VLSI, Verilog, Pascal, Basic, Altera MAX

Mathematics and Simulation: Matlab, MathCAD, COMSOL Multiphysics FEMLAB, Pspice,

CAD and Illustration: Solid Edge, AutoCAD, Inventor, Cadence Layout, PCB Layout, 3D Lightyear, 3D Studio Max, Adobe Illustrator, Adobe Photoshop, Adobe Premiere, CorelDraw

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SKILLS - HARDWARE

Electrical:

- NI data acquisition products
- Lakeshore Gaussmeter
- Agilent Network Analyzer
- signal generator
- digital multimeter
- frequency counter
- oscilloscope
- semiconductor parameter analyzer

Mechanical:

- CNC machining
- 3-axis motorized stage
- stereolithography rapid prototyping
- micro-fluidics
- profilometer
- mass flow controller and meters
- digital multimeter
- SEM
- switching valves
- motorized syringe and peristaltic pump
- optical microscopes

Sensors:

- Evorinoics gas mixing system
- electrochemistry with potentiostats
- Chemical Field Effect Transistor sensor arrays
- Inter-digitated 4 point probe chemi-resistor sensors
- Quartz Crystal Microbalance
- Ocean Optics spectrometer with FIALab flow injection analysis system
- microelectrode array chip with multi-channel potentiostats

PUBLICATIONS

Journal

Yu, G. Y., Josowicz, M., Hunt, W. D., and Janata, J., "Development of a magnetic quartz crystal microbalance," Review of Scientific Instruments, vol. 78, no.6, 065111, 2007

Yu, G. Y. and Janata, J., "Proximity effect in quartz crystal microbalance," Analytical Chemistry, vol. 80, no. 8, p. 2751, 2008

Yu, G. Y. and Janata, J., "Magnetic quartz crystal microbalance: a multi-layer gold/nickel stack," Journal of Applied Physics, Journal of Applied Physics, 104, 043908 (2008).

Conference

Raheem Beyah, Shantanu Kangude, George Yu, Brian Strickland, and John Copeland. "Rogue Access Point Detection using Temporal Traffic Characteristics." In the Proceedings of IEEE Global Communications Conference (GLOBECOM), December 2004

Flavio Heer, Manuel Keller, George Yu, Jiri Janata, Mira Josowicz, Andreas Hierlemann. "CMOS Electro-Chemical DNA-Detection Array with On-Chip ADC." IEEE International Solid-State Circuits Conference, February 2008

Jiri Janata and George Yu, "Development of a magnetic quartz crystal microbalance" Gordon Research Conference in Electrochemistry, January 2008.

George Y. Yu, Kevin C. Vavra, and Jiri Janata, "Magnetic Quartz Crystal Microbalance: Alternating Ferromagnetic Diamagnetic Multi-layers." Transactions of Electro-Chemical Society 215th Meeting, submitted February 2009.