Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

B M E S e m i n a r S e r i e s P r e s e n t s

"Self-Powered Biosensing Systems"

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Dr. Slaughter received a Ph.D. in Computer Engineering in 2005, an M.S. in Chemical Engineering in 2003, and a B.S. in Chemistry in 2001, all from Virginia Commonwealth University. Dr. Slaughter was previously an Assistant Professor in the Department of Computer Engineering at Virginia State University 2007-2010, with promotion to Associate Professor with tenure in 2010. Most recently, Dr. Slaughter was an Assistant Professor in the Department of Computer Science and Electrical Engineering at the University of Maryland Baltimore County from 2010 to 2016, until her promotion to her current position as Associate Professor, also in the Department of Computer Science and Electrical Engineering at UMBC.

Dr. Slaughter's research focuses on the application of sensor-processor integration, bioelectronics design and theory, optimization methods for physical circuit design, biologically inspired computing (neural networks), and sensor interfacing and wireless networking and communications. Other research areas include: bioengineering, biosensors, BioMEMS, and fluidic devices.

ABSTRACT

My research initiatives focus on the application of micro/ nanoscale technologies to create sense-and respond systems for blood metabolites, neurotransmitters and volatile organic compounds/gas detection in trauma patients and crowded areas. I'm currently conducting research on the development of flexible selfpowered biological and chemical sensors focusing on the use of micro- and nanoscale technology to design and develop new devices to diagnose and treat diseases. We are continuously working on the next generation of biological and chemical sensors, focusing our particular attention to: (1) the development of a novel optical resonator that explores the interaction of target species with a highly sensitive spatial region (nano-notch) to rapidly and cost-effectively detect the multiple ncRNAs for non-small cell lung cancer in sputum for noninvasive point of care (POC) tests; (2) the development of neural probes that enable a direct monitoring of the translational brain signatures (local field potentials) and neurotransmitter (dopamine) released from multiple recording sites within the brain; (3) the development of a multiparametric bioreactor/biosensor system capable of normothermic perfusion and biomimetic electrical stimulation for use in preserving rodent abdominal wall and rodent whole-extremity forelimb; and (4) the development of a self-powered biosensing system that has enabled us to pioneer the integration of a single biofuel cell with a two-stage electrical power amplification circuit to generate usable electrical power while sensing glucose.

Lunch will be provided!!

Monday, April 2nd
12:00 Noon

Presented From: 4142 Engineering Building III (NC State)
Videoconferenced to: 150 MacNider Hall (UNC)