IEM SEMINAR SERIES

TUESDAY
January 31st, 2017

Nanoscale Materials and Fabrication Methods for Flexible Electronics

Institute for Engineering in Medicine

UNIVERSITY OF MINNESOTA
Driven to Discover℠

Dr. Sarah Swisher
Assistant Professor, Electrical & Computer Engineering
University of Minnesota

FREE event, no registration required.

Pizza and Beverages will be provided from 11:45 am

12:00PM - 1:00PM
Nils Hasselmo Hall
Room 4-101

For additional information on Dr. Swisher's presentation please contact:
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The Institute for Engineering in Medicine (IEM) is pleased to announce a seminar by Dr. Sarah Swisher, "Nanoscale Materials and Fabrication Methods for Flexible Electronics".

In parallel with the continued scaling of traditional CMOS devices, another paradigm of electronics has taken shape: flexible electronic systems. Flexible displays, electronic textiles, bio-inspired sensors, and wearable or implantable medical devices are just a few applications that benefit from large-area form factors and mechanical flexibility, both of which are challenging to achieve with conventional wafer-based electronics.

In this talk, I will introduce our work developing solution-processed materials for flexible electronics. Specifically, I will discuss the impact of materials synthesis and device fabrication on the performance of solution-processed thin-film transistors (TFTs) that utilize semiconducting metal oxides as the channel material. I will then focus on one example of how these materials will enable new applications: our recent development of a "smart bandage" prototype for detecting and monitoring tissue wounds in vivo. We have developed a flexible, electronic device that non-invasively maps pressure-induced tissue damage, even when such damage cannot be visually observed. These results demonstrate the feasibility of an automated, non-invasive "smart bandage" for early monitoring and diagnosis of pressure ulcers, improving patient care and outcomes. I will discuss some of the ongoing work in our group developing new nanoscale materials and fabrication methods for flexible electronics, and the potential benefits for applications in medical research and health care.

Sarah L. Swisher received her B.S. in Electrical Engineering from the University of Nebraska-Lincoln in 2004. Sarah spent several years in industry as the lead electrical design engineer for a series of GPS-enabled bicycle computers at Garmin. She then received her M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California, Berkeley in 2012 and 2015, respectively. Dr. Swisher has been awarded the National Science Foundation Graduate Research Fellowship, the UC Berkeley Graduate Division Mentored Research Fellowship, the Intel Foundation Noyce Memorial Fellowship in Microelectronics, and the UC Berkeley EECS Chair's Excellence Award. Prof. Swisher joined the electrical and computer engineering faculty at the University of Minnesota in 2015. Her research sits at the intersection of semiconductor device physics, materials science, and bioengineering. The primary aim of her work is to leverage the beneficial properties of nanomaterials and flexible electronics to address societal-scale challenges. Her group focuses on the materials, devices, and fabrication processes that will enable innovative advancements in biological sensors.

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