

## UCSD NANOENGINEERING SEMINAR

Wednesday, April 27, 2016

Seminar Presentation: 11:00am - Noon

SME 248 - Cymer Conference Center

**Epidermal Sensor Systems for Sensing and Therapy**

Dr. Nanshu Lu

*University of Texas at Austin***Abstract:**

Epidermal sensor is a class of skin-mounted, tattoo-like circuits and sensors capable of continuous vital sign monitoring, human-machine interface, as well as transdermal therapies. Their mechanical properties such as thickness, softness, and mass density are well matched with human epidermis and are therefore able to form the most intimate contact with human skin and can provide unprecedented signal fidelity and comfort. Their demonstrated functions include long-term, continuous measurement of electroencephalogram (EEG), electrocardiogram (ECG), electromyogram (EMG), skin temperature, skin hydration, respiratory rate, blood pressure, as well as sweat (e.g. glucose and lactate). They can also be applied for therapeutics including thermal treatment and transdermal drug delivery. However, the widespread use of disposable epidermal sensors hinges on the low cost and high throughput manufacture. We therefore invented a cost and time effective, completely dry, benchtop “cut-and-paste” method for the green, freeform, and portable manufacture of multiparametric epidermal sensor systems.

**Biosketch:**

Dr. Lu received her Bachelor's degree from Tsinghua University in 2005 and Ph.D. from Harvard in 2009. She spent two years at University of Illinois as a Beckman Postdoctoral Fellow before she joined UT Austin as Assistant Professor in 2011. Dr. Lu has more than 50 journal publications with more than 3000 citations in the field of flexible and bio-integrated electronics. She was named 35 innovators under 35 by MIT Technology Review and is the receiver of NSF CAREER Award, Air Force and Naval Research Young Investigator Awards, and 3M Non-Tenured Faculty Award.

**Group link:** <https://lu.ae.utexas.edu/>