

The Department of Mechanical Engineering presents:

# Liwei Lin, Ph.D.

Department of Mechanical Engineering  
University of California Berkeley

**Friday, October 12, 2012**  
**11:10AM-12:00PM**  
**Bourns Hall A265**



## **Nanostructures for Sensing and Energy Applications**

### *Abstract*

Zero- and one-dimensional (1D) nanostructures have been attracting great interests in the past decades for possible applications with two major emphases: (1) synthesis, assembly and integration of nanomaterials; and (2) practical applications in fields such as device, energy and medicine. Leveraging from our core competencies in MEMS fabrication, we have been working on sensing and energy generation/storage applications of zero- and one-dimensional nanostructures. I will talk about some of the progresses in these areas including: (1) the application of quantum dots as local thermometers to detect transient intra-cellular temperature profile of living cells as well as temperature distributions of micro structures; (2) direct synthesis and self-aligned 1D nanostructures on arbitrary substrates for applications such as flexible electronics; (3) 1D piezoelectric nanofibers as nanogenerators; and (4) forest structures made of 1D nanostructures for energy storage applications such as supercapacitors and batteries.

### *Biography*

Professor Liwei Lin joined the University of California at Berkeley in 1999 and is now Professor at the Mechanical Engineering Department and Co-Director at Berkeley Sensor and Actuator Center, an NSF/Industry/University research cooperative center. His research interests are in design, modeling and fabrication of micro/nano structures, sensors and actuators as well as mechanical issues in micro/nano systems including heat transfer, solid/fluid mechanics and dynamics. Dr. Lin is the recipient of the 1998 NSF CAREER Award for research in MEMS Packaging and the 1999 ASME Journal of Heat Transfer best paper award for his work on micro scale bubble formation. He led the effort to establish the MEMS division in ASME and served as the founding Chairman of the Executive Committee from 2004~2005. He is an ASME Fellow and has 15 issued US patents in the area of MEMS. He was the general co-chair of the 24th international conference on Micro Electro Mechanical Systems. Currently, he serves as a subject editor for the IEEE/ASME Journal of Microelectromechanical Systems and the North and South America Editor of Sensors and Actuators – A Physical.

**COLLOQUIUM**  
**MECHANICAL ENGINEERING**