

## **ME DEPARTMENTAL SEMINAR**

**Friday, January 27, 2006**

**1:00pm – 2:00pm**

**2233 GG BROWN**

**Dr. Nikolas Chronis**

**U/C at Berkeley**

***“Calcium Imaging of Sensory Neurons in the Nematode *C.elegans*  
Using a Microfluidic ‘Worm’ Chip”***

**Abstract:**

A fundamental goal in neurobiology is to understand the cellular mechanisms that mediate sensory processing in various neural networks. To examine this question, fluorescent calcium indicators expressed in specific neurons of the nematode *C.elegans* have been used in the past to image neuronal activity of glued worms during presentation of sensory stimuli. A key element for a successful imaging recording is the appropriate immobilization of the animal and the controllable delivery of the stimuli.

In this talk, a microfluidic chip will be presented that greatly facilitates the imaging procedure. The microfluidic platform integrates a worm trap and a fluidic delivery system for precisely stimulating the nose of the intact animal. Imaging data from different neurons that are part of the worm olfactory and oxygen circuits will also be discussed.

**Biography**

Nikolas Chronis received his B.S. and Ph.D. degrees from Aristotle University (Greece) and University of California Berkeley in 1998 and 2004 respectively, both in mechanical engineering. In 2000, he joined the Berkeley Sensor and Actuator Center at the University of California at Berkeley as a graduate student researcher under the supervision of Luke Lee. He is currently a postdoctoral researcher at Rockefeller University (Bargmann Lab), developing microfluidic tools for studying neural networks in the nematode *C.elegans*. His research interests include polymer MEMS and polymer micromachining, microfluidics, microrobotics for bio-manipulation and optical microsystems for lab-on-chip and *in vivo* imaging applications.