MECHANICAL AND AEROSPACE ENGINEERING
COLLOQUIUM SERIES

“Probing worm brains and manipulating cells and with microfluidics”

Professor Hang Lu
School of Chemical and Biomolecular Engineering
Georgia Institute of Technology

Friday, October 16, 2009
1:30PM
205 Thurston Hall
Refreshments: 2:30pm, 206 Thurston Hall

ABSTRACT

My lab is interested in engineering microfluidic devices to address questions in neuroscience and cell biology that are difficult to answer with conventional techniques. Not only does microfluidics provide the appropriate length scale for investigating molecules, cells, and small organisms, but one can also take advantage of unique phenomena associated with small-scale flow and field effects. In addition, microfluidics allows unprecedented parallelization and automation that facilitate gathering quantitative and large-scale data about complex biological systems. I will show a microfluidic system for automated high-resolution imaging and high-throughput genetic screens in C. elegans (the worm, a free-living soil nematode). Our goal is eliminate the bottleneck in the manual, skill-intensive phenotyping and laser cell kill techniques in neurogenetic studies, and transform them into high-throughput and quantitative ones. I will also give a few examples using microfluidics to manipulate cells to study signal transduction networks in cells.

BIO

Hang Lu is an Assistant Professor in the School of Chemical and Biomolecular Engineering. She graduated *summa cum laude* from the University of Illinois at Urbana-Champaign in 1998 with a B.S. in Chemical Engineering. She has a Master’s degree in Chemical Engineering Practice from MIT (2000). She obtained her Ph.D. in Chemical Engineering in 2003 from MIT working with Dr. Klavs F. Jensen (Chemical Engineering) and Dr. Martin A. Schmidt (Electrical Engineering and Computer Sciences) on microfabricated devices for cellular and subcellular analysis for the study of programmed cell death. Between 2003 and 2005, she pursued a postdoctoral fellowship with neurogeneticist Dr. Cornelia I. Bargmann (Howard Hughes Medical Institute investigator) at University of California San Francisco and later at the Rockefeller University on the neural basis of behavior in the nematode *C. elegans*. Her current research interests are microfluidics and its applications in neurobiology, cell biology, and biotechnology. Her award and honors include a DuPont Young Professor Award, a DARPA Young Faculty Award, a Sloan Foundation Fellowship, and a Georgia Tech junior Faculty Teaching Excellence Award; she was also named an MIT Technology Review TR35 top innovator.