CMET Seminar

UNIVERSITY OF DELAWARE

Dr. Hang Lu

Professor, School of Chemical & Biomolecular Engineering

Georgia Institute of Technology

DATE:

February 25, 2016

TIME:

2:00 p.m.

LOCATION:

366 Colburn Lab

Hang Lu is a Professor and James R. Fair Faculty Fellow of Chemical and Biomolecular Engineering. She received her B.S. at University of Illinois, Urbana-Champaign, and her Ph.D. from Massachusetts Institute of Technology. She directs Lu Fluidics Group on the use of microfluidics devices engineered to aid in the study of questions in the biological sciences. The group is interested in doing research at the interface of engineering and biology, engineering BioMEMS (Bio Micro-Electro-Mechanical System) and microfluidic devices to address questions in neuroscience, cell biology, and biotechnology that are difficult to answer using conventional techniques. Dr. Lu has collaborated on more than eighty publications and she has received several prestigious awards, including the Young Innovators Award in Analytical Chemistry and the Human Frontier Science Program Grant.

"Microfluidics, Automation, and Big-Data for Systems Biology"

My lab is interested in engineering micro systems and automation tools to address questions in systems neuroscience, developmental biology, and cell biology that are difficult to answer with conventional techniques. Micro technologies provide the appropriate length scale for investigating molecules, cells, and small organisms; moreover, one can also take advantage of unique phenomena associated with small-scale flow and field effects, as well as unprecedented parallelization and automation to gather quantitative and large-scale data about complex biological systems. In one example, I will show how we take advantage of simple hydrodynamics to design microfluidic systems for large throughput and spatially and temporally well-controlled experiments in Drosophila embryonic development as well as in immunology. In another example, I will show how we combine the power of experimental tools and computational tools to study problems in development neurobiology and behavior in C. elegans. The power of these engineered systems lies in that the throughput that can be achieved by using automation and microfluidics is 100-1,000 times that of conventional methods; furthermore, we can obtain information unattainable or at least not easily attainable by conventional tools.