



BUFFALOENGINEER

SPRING 2011

Barbara and Jack Davis Hall Named for Generous Alumnus and Wife



Faculty

- Takeuchi (BME, CBE, EE): National Inventor's Hall of Fame
- Govindaraju (CSE): Named SUNY Distinguished Professor; Wins HP Labs Innovation Award
- Park (CBE): NSF CAREER Award
- Singla: Air Force Young Investigator

Students

- Dvora (CBE): AIChE Poster Award
- UB SEDS Wins National Chapter of the Year

Development

- Alumni Association Gift
- Scholarship Funds: Bringhurst-Levy, Lee, Shames

Alumni

- Tamara Brown Cited as STEM Mentor
- Erie-Niagara NYSSPE Recognizes UB Engineering Alums
- UBEEA: Basketball and Football Parties; Spirit Award



*Provost and CSE Professor
Satish K. Tripathi Named
UB President*

*Dean and CBE Professor
Harvey G. Stenger Jr. Named
UB Interim Provost*

*ISE Professor & Graduate
Studies Associate Dean
Rajan Batta Named Acting Dean*

UB Leaders Promoted



(L to R): Mitin (EE), Wetherhold (MAE), Lewis (MAE), Litchinitser (EE), Govindaraju (CSE)

New Fellows

School and Graduate Programs Ranked Highly

EE's Oh Researches Droplet Manipulation

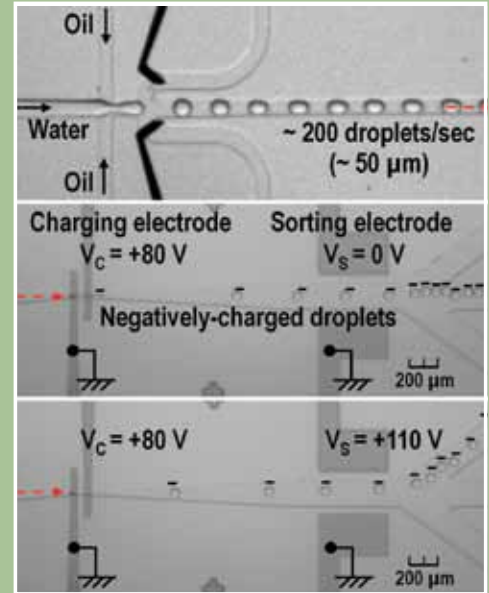


EE Assistant Professor Kwang W. Oh's research group in the Sensors and MicroActuators Learning Lab (SMALL) developed an electrostatic droplet manipulation module that can positively or negatively charge pre-formed neutral droplets on-demand.

His SMALL lab continues to investigate a synchronization and fusion module that can automatically synchronize and laterally fuse a pair of oppositely-charged droplets, and form a two-parallel-plug-like droplet. Then the in-droplet particle separation can be performed by pulling magnetic beads from one side of the fused droplet to the other in a separation channel, by use of an external magnetic field.

The research, supported by the National Science Foundation, seeks a high-throughput droplet-based microfluidic separation technology that enables on-demand electrostatic droplet manipulation and in-droplet particle separation for magnetic bead-based bioassays.

The advantages of the platform include the unique droplet-based magnetic separation, the ability to digitally manipulate droplets at a very high-throughput, compartmentalization of reagents within discrete droplets, the robust electrostatic droplet manipulation, and the possibility of many different types of on-chip integration. The platform is a generic, fast, and robust tool that can be used not only in the context of any large-scale assay, but is also well-suited for analysis of small samples for medical relevance. Potential applications of the droplet-based microfluidic platform would be protein/cell separation, DNA/RNA purification, and immunoassay/molecular diagnostics.



Photographs of on-demand electrostatic droplet manipulation. Top: Generation of neutral water-in-oil droplets on a droplet-based microfluidic device. Middle: Negatively-charged droplets flowing into the middle outlet. Bottom: Continuous droplet sorting of the negatively-charged droplets.

NYSTAR Center for Advanced Technology: Adding Value for Regional Economy

Esther Takeuchi Co-Directs

In a consistent demonstration of its positive contribution to the region's economic health, the UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT) has had a part in creating 245 jobs and retaining another seventeen, realizing a statewide non-job economic impact in the millions, all during the past five years.



During this same time, UB CAT has contracted 57 total projects, with a recent trend toward biomedical engineering-related projects since SUNY Distinguished and Greatbatch Professor **Esther S. Takeuchi** (with appointments in BME, CBE, Chemistry, and EE) has been co-director.

The UB CAT supports university-industry collaboration in research, education and technology transfer, focusing on helping New York State-based businesses gain a competitive technological edge. UB CAT is one of 15 centers in the state with a ten-year designation from the New York State Foundation for Science, Technology and Innovation (NYSTAR). NYSTAR provides annual funding to the UB CAT, which has recently been augmented by an additional National Grid grant. UB CAT operates within the New York State Center of Excellence in Bioinformatics & Life Sciences (CoE).

In the 2010–11 fiscal year alone, UB CAT is supporting eighteen companies in the life sciences industry by distributing funds that support projects leveraging the expertise of UB researchers, including those from the School of Engineering. In addition to funding, UB CAT provides business development assistance, workforce development programming, networking, and access to UB's equipment, expertise, and research and development facilities. Below is a recent history of UB CAT projects with UB Engineering principal investigators and their industry partners. Included are several National Grid–UB CAT awards for biomedical projects, with CSE Teaching Assistant Professor **Michael Buckley**, MAE Professor **Thenkurussi "Kesh" Kesavadas**, and ISE Assistant Professor **Gwanseob Shin** as PIs on these projects.

For more information about UB CAT, please contact Marnie LaVigne, UB CAT Business Director and CoE Director of Business Development; Melissa Hagen, Account Administrator; and Renata Bator, Business Development Associate.

UPCOMING AND EXISTING UB CAT PROJECTS WITH SEAS PIS:



Applied Sciences Group, Simple and Advanced Talker Interface Development: CSE Teaching Assistant Professor Michael Buckley



Simulated Surgical Systems, Further Development of Existing Software Infrastructure and Content for HoST Technology Platform: MAE Professor Thenkurussi "Kesh" Kesavadas



New Scale Technologies, Life Science Microfluidic Pump: EE Assistant Professor Kwang Oh



Diagnaid, Inc., Computer Aided Detection of Lumbar Spinal Pathology on MRI Exams; Medcotek, Inc. (prior to 2008), IT Development for Digital Transmission and Remote Diagnosis of Medical Images: CSE Professor Vipin Chaudhury



Oral Health Innovations, Study and Prototyping of an In-Mouth Teeth Cleaning System: MAE Professor for Competitive Product & Process Design Kemper Lewis



Medical Acoustics, LLC, Prototype Development and Validation of Lung Flute® Medical Device; Oral Health Innovations, Prototype Development of an Automated Dental Cleaning Device for Persons with Limited Motor Skills: New York State Center for Engineering Design and Industrial Innovation Research Associate Andrew Olewnik (BS '00 MS '02 PhD '05 ME)



Health Transaction Network Corporation, Health Transaction Network – Device Software Development: CSE's SUNY Distinguished Professor Venu Govindaraju



Sensors, Development of Strategic Materials for THz Devices Operable at Elevated Temperatures: EE's SUNY Distinguished Professor Vladimir Mitin



Isolation Sciences, Fumehood Energy Saver Technical and Operational Efficiency Test Program: ISE Assistant Professor Gwanseob Shin