

# Nano@Tech

## Translation of Microtechnologies for Hematologic Applications

**Wilbur Lam**

**Professor, Wallace H. Coulter Department of Biomedical Engineering at Emory University and Georgia Tech**

**December 12, 2023 | Noon - 1:00 p.m.**

**Marcus Nanotechnology Building | Rooms 1116-1118 | 345 Ferst Drive NW**

**Abstract:** Hematologic processes are frequently comprised of cellular and biomolecular interactions that are biophysical in nature and may involve blood cells (erythrocytes, leukocytes, and platelets), endothelial cells, soluble factors (coagulation proteins, von Willebrand factor, and cytokines), the hemodynamic environment, or all of the above. These phenomena are often pathologically altered in hematologic diseases but are difficult to study using standard in vitro and in vivo systems. With the capabilities to dissect cellular and biomolecular phenomena at the micro to nanoscales with tight control of the mechanical and fluidic parameters, micromechanical and microfluidic systems can serve as novel yet physiological in vitro disease models to provide insight into the pathophysiology of blood disorders. Due to their inherent portability, these microsystems can also be translated into diagnostic tests used at the point-of-care or even by patients at home, especially if those technologies are coupled to existing consumer-based devices like smartphones. Recently, our lab has also developed open source software for the entire field to analyze blood-based microfluidic data more easily as well as embark on developing combined microfluidic and analytical strategies to help improve the efficiency and lower the cost of cellular therapies for hematologic diseases. By developing state-of-the-art microdevices to answer hematologic questions, microsystems engineering has the potential to significantly advance our understanding of blood disorders and to develop innovative diagnostic and therapeutic strategies for patients afflicted with those life-threatening diseases.

**Bio:** Wilbur A. Lam, MD, PhD is the W. Paul Bowers Research Chair and Professor of Pediatrics and Biomedical Engineering at Emory University and Georgia Tech. Dr. Lam serves as Principal Investigator of the Atlanta Center for Microsystems Engineered Point-of-Care Technologies that is part of the NIH's Point-of-Care Technologies Research Network and Director of Emory's Center for the Advancement of Diagnostics for a Just Society. He is an elected member of the National Academy of Medicine and the American Society for Clinical Investigation and a fellow of the American Institute for Medical and Biological Engineering. As a physician-scientist-engineer, his work involves the development of microtechnologies to study and diagnose hematologic and oncologic disorders, especially those that empower patients to more easily monitor their own diseases at home and in the global health and rural settings.

**A boxed lunch will be served on a first come first served basis.**

**For information on future events contact: [nanotech@ien.gatech.edu](mailto:nanotech@ien.gatech.edu)**

**Watch a live-stream of the seminar here: <https://tinyurl.com/NanoTechLive>**

