

Richard and Carol Pletcher Seminar

“Nanoscale 3D Printing to enable Fundamental Biology Studies”

By Alice E. White

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**Seminar on November 8, 2016 at 11:00 am in 2004 Black
Seminar host: Sonal Padalkar**

Abstract

The ability to rapidly prototype arbitrarily complex 3D nano- to micro-scale structures and topographies using a type of 3D printing called Direct Laser Writing (DLW) has enabled us to address a variety of re-search challenges. For example, understanding the role of peripheral nerves in fighting disease has been limited due to the challenges in reliably accessing and measuring the signals in these microscopic nerves. With our tool, we have developed a customizable nerve cuff to enable this type of study. In another study, we have extended 2D cell-migration studies to a 3D environment, including the use of mechanical metamaterials with MEMS actuation.

Alice White recently joined the College of Engineering of Boston University from Bell Labs, where she had been Chief Scientist. In that role, she was responsible for the long-term research strategy, university partnerships, and the Bell Labs Technical Journal, as well as maintaining technical excellence through technology- and science-recognition programs. She has a Ph.D. in physics from Harvard University and a broad technical background in experimental solid-state physics and fabrication of optical components. Since 1989, she has held various leadership positions at Bell Labs including Director of Materials Physics Research, Director of Integrated Photonics Research, VP of the Physical Technologies Research Center, President of the NJ Nanotechnology Consortium, and location leader for Bell Labs North America. In 1991, she received the Maria Goeppert-Mayer Award of the American Physical Society for her work on compound formation using ion implantation. She was named a Bell Labs Fellow in 2001 for her work in “developing and applying novel integrated photonic device technologies in advanced optical networks”. With over 125 publications and 5 patents, she is a fellow of the American Physical Society, the IEEE Photonics Society, and the Optical Society of America. At BU, she has established the Multiscale Laser Lithography Lab and is developing mechanical metamaterials for biological studies using a laser direct write technology. In addition to her role in Mechanical Engineering, she is a Professor of Materials Science and Engineering and a Professor of Physics, as well as an affiliate of the BU Photonics Center.

This seminar counts towards the ME 600 seminar requirement for Mechanical Engineering graduate students.

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