

# MAE Seminar SERIES

**DISTINGUISHED  
SPEAKER**

THURSDAY,  
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3:30 PM

101 DAVIS HALL



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## NANOSCALE 3D PRINTING TO ENABLE FUNDAMENTAL BIOLOGY STUDIES

### 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 research 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. Recently, we have developed a practical method for dynamically manipulating soft 3D microstructures through integration with existing micro-electromechanical (MEMS) technology.

### BIO SKETCH

Alice White joined the College of Engineering of Boston University in 2013 from Bell Labs, where she held various leadership positions including Director of Materials Physics Research, Director of Integrated Photonics Research, VP of the Physical Technologies Research Center, President of the NJ Nanotechnology Consortium, location leader for Bell Labs North America, and finally Chief Scientist. 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. 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 7 patents issued/pending, she is a Fellow of the American Physical Society, the IEEE Photonics Society, and the Optical Society of America. At BU, she leads a department with 50 faculty members. In 2014, she established the Multiscale Laser Lithography Lab and is developing mechanical metamaterials for biological studies using a laser direct write technology. This research is one thrust of a recently established BU-led NSF Engineering Research Center (ERC), CELL-MET. In addition to her role in Mechanical Engineering, she is a Professor of Materials Science



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