

SEMTE

seminar

Advanced Materials and Manufacturing for Life Sciences

School for Engineering of Matter, Transport and Energy

abstract

Micro/Nano technology is used to create many new materials and devices with a vast range of applications in materials science, electronics and photonics, and biomedical applications.

In this seminar, I will first talk about some recent progress on the development of functional metamaterial structures and devices using MEMS technology for real world applications. This is especially important for the technologically relevant terahertz frequency regime where there is a strong need to create novel materials and devices to realize applications ranging from spectroscopic identification of hazardous materials to noninvasive medical imaging.

The seminar will then discuss the use of silk protein as a sustainable material in optics and photonics, electronics and optoelectronic applications. The favorable properties of the material certainly make a favorable case for the use of silk, yet serve as a broad inspiration to further develop biological foundries for both the synthesis and processing of Nature's materials for high technological applications.

Dr. Hu Tao

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biosketch

Hu Tao received his Ph.D. in Mechanical Engineering with the Best Dissertation Award from Boston University, in 2010. His research interests have mainly focused on terahertz metamaterials using MEMS technology. After graduation, Dr. Tao joined the Department of Biomedical Engineering at Tufts University. He is currently a Research Assistant Professor at Tufts University and his research interests focus on micro/nano- technology enhanced novel electronic and photonic devices for biomedical applications. Dr. Tao has published over 40 papers in peer-reviewed scientific journals including Science (cover), Nature, Nature Photonics (cover), Nature Communications, PNAS, Advanced Materials (cover), Small (cover) and Physical Review Letters.