UNIVERSITY of HOUSTON | ENGINEERING

Department of Biomedical Engineering

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Date Friday, September 05, 2026
Time 12:00 to 1:00 PM
Location SEC 203

Title: *Convergence of multispectral radiation for cancer detection and therapy*

Abstract: Precision in detecting and treating cancer is essential for preventing relapse. Our approach combines two light-based methods. The first boosts intraoperative accuracy using tumor-targeted molecular probes and a near-infrared fluorescence imaging device integrated into head-mounted displays, allowing real-time visualization of tumors and sentinel lymph nodes. The second employs radionuclide-stimulated dynamic therapy, where Cerenkov-radiating radioisotopes activate photosensitizers to produce cytotoxic reactive oxygen species that inhibit both primary and metastatic lesions. These strategies improve surgical precision and broaden therapeutic options for comprehensive and effective cancer management.

Bio: Dr. Samuel Achilefu, Lyda Hill Distinguished University Chair and inaugural department chair of Biomedical Engineering at the University of Texas Southwestern in Dallas, Texas, is an international leader in optical and multimodal imaging, image-guided cancer surgery, portable imaging devices, and nanotechnology. Previously at Washington University, his innovative research and more than 70 U.S. patents have contributed significantly to laboratory and clinical medicine. Dr. Achilefu's achievements have been recognized with election to the National Academies of Engineering, Medicine, and Inventors. He is a fellow of many prestigious societies and has received over 20 national and international awards. His commitment to innovation continues to influence molecular imaging, biomedical engineering, and cancer treatment.