

Abstract:

Title: Lighting the Path to Better Healthcare

Cancer. Infertility. Hearing loss. Each of these phrases can bring a ray of darkness into an otherwise happy life. The Stanford Biomedical Optics group, led by Professor Audrey Bowden, aims to develop and deploy novel optical technologies to solve interdisciplinary challenges in the clinical and basic sciences. In short, we use light to image life -- and in so doing, illuminate new paths to better disease diagnosis, management and treatment. In this talk, I will discuss our recent efforts to design, fabricate and/or construct new hardware, software and systems-level biomedical optics tools to attack problems in skin cancer, bladder cancer, hearing loss and infertility. Our efforts span development of new fabrication techniques for 3D tissue-mimicking phantoms, new strategies for creating large mosaics and 3D models of biomedical data, machine-learning classifiers for automated detection of disease, novel system advances for multiplexed optical coherence tomography and low-cost technologies for point-of-care diagnostics.

Biography:

Audrey K (Ellerbee) Bowden is an Assistant Professor of Electrical Engineering at Stanford University. She received her BSE in EE from Princeton University, her PhD in BME from Duke University and completed her postdoctoral training in Chemistry and Chemical Biology at Harvard University. During her career, Dr. Bowden served as an International Fellow at Ngee Ann Polytechnic in Singapore and as a Legislative Assistant in the United States Senate through the AAAS Science and Technology Policy Fellows Program sponsored by the OSA and SPIE. She is a member of the OSA, a Senior Member of SPIE and is the recipient of numerous awards, including the Air Force Young Investigator Award, the NSF Career Award and the Hellman Faculty Scholars Award. She is a former Associate Editor of IEEE Photonics Journal, a member of numerous professional committees, and her research interests include biomedical optics, microfluidics, and point of care diagnostics.