

Brett E. Bouma, PhD

Degrees

PhD, Physics, University of Illinois at Chicago, 1993

MS, Physics, Michigan State University, 1988

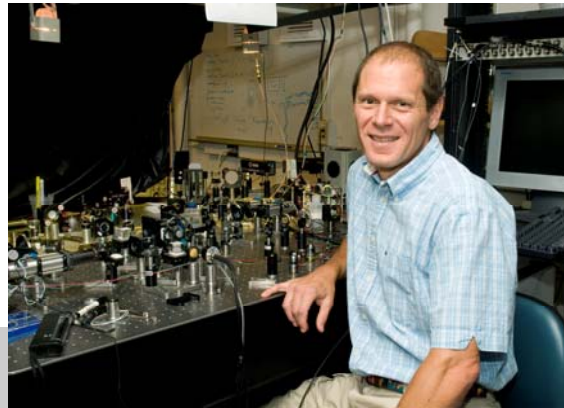
BS, Physics, Hope College, 1986

Research Interests

Dr. Bouma's research interests are primarily focused on the development and validation of new optical methods for disease diagnosis. It is a common observation in medicine that early intervention improves outcome. In certain cases the difference between early and late detection can mean life or death. Light, and advance fiber-optic technologies in particular, open the prospect for minimally invasive diagnosis of early disease stages. Dr. Bouma's research has contributed substantially to the



development of new imaging modalities, including optical coherence tomography (OCT), spectrally encoded confocal microscopy and spectrally encoded endoscopy. Since joining the Harvard Medical School faculty, Dr. Bouma has established several active collaborations within the Massachusetts General Hospital. These collaborations involve pathologists, clinicians, physicists and engineers conducting clinical studies in Gastroenterology, Urology, Otolaryngology, Cardiology, Dermatology and Gynecology. Current clinical studies



include a natural history study of acute coronary syndromes and vulnerable plaque and the investigation of novel screening methods for managing patients with Barrett's esophagus.

Seminar Synopsis

Advances in Optical Imaging and Translation into Clinical Medicine

Despite a broad spectrum of initiatives in the federal, state, private and commercial sectors, cancer remains the second

leading cause of death in the United States. Although the underlying basis for this statistic is multifactorial, one nearly universal principle is that early detection correlates with improved long-term outcome. Optical methods, enabled by advances from the telecommunications industry, are offering new strategies for early detection through technologies that are consistent with the requirement for low-cost implementation. This seminar will introduce new techniques for wide-field microscopic imaging, which are facilitated by miniature catheters and endoscopes for minimally invasive access to internal organs. These techniques bring the pathologist's exam into the clinical setting and offer a new paradigm for diagnostic screening. The seminar will additionally highlight novel approaches for integrating diagnostic imaging with therapy, potentially yielding an unprecedented accuracy in the treatment of early cancerous changes.

Information derived from the faculty biography section of the Harvard Health Sciences and Technology website:
<http://hst.mit.edu/index.jsp>