

# Photonics Forum

“Diffuse Optical Spectroscopy for Basic Science and Translational Applications in Oncology”

Dr. Darren Roblyer, Assistant Professor of Biomedical Engineering

Dr. Darren Roblyer will present Diffuse Optical Spectroscopic Imaging (DOSI) as an emerging technology for exploring the metabolic and hemodynamic response of tumors during chemotherapy. DOSI uses amplitude modulated near-infrared light to create photon-density waves that propagate through biological tissue. By measuring the amplitude decay and phase shifts induced by the tissue, we can separate the effects of absorption and scattering on our detected optical signal, and ultimately extract quantitative values of tissue-level hemoglobin, water, and lipids. Dr. Roblyer is currently developing new, clinic-friendly DOSI instruments based on gigasample/sec analog-to-digital converters. He is using DOSI in preclinical and clinical applications to explore how current and emerging chemotherapies alter tumor metabolism in the first hours and days after administration. His goal is to discover new prognostic optical markers that will allow him to predict treatment response and dynamically alter therapies to improve overall outcome and survival of cancer patients.

Dr. Roblyer joined the faculty of Boston University in 2012 as an Assistant Professor in the Department of Biomedical Engineering. His research focus is on the development of near-infrared diffuse optical techniques for basic and translational applications in oncology. After receiving a B.S. in Biomedical Engineering from Johns Hopkins University in 2004, Darren received his Ph.D. as a HHMI Med-Into-Grad Fellow in 2009 from the Bioengineering Department at Rice University where he studied under Professor Rebecca Richards-Kortum. There he explored the use of in vivo autofluorescence imaging for the detection and delineation of oral cancer lesions in collaboration with the M.D. Anderson Cancer Center. Prior to starting his faculty position, Darren was a Department of Defense Postdoctoral Fellow at the Beckman Laser Institute at the University of California.

*March 26, 2013*

*12:00 p.m.*

*9th Floor*

*Colloquium Room*

*Photonics Center*

*8 Saint Mary's  
Street*

*Lunch will be  
served!*

