“Photoacoustic Ultrasound for New Insights in Medicine”

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2:30 – 3:30 PM
Brauer Hall, Room 12

Abstract
Acoustic imaging is broadly accessible with good penetration depths and video frame rates. Unfortunately, wider use of ultrasound is limited by poor contrast of target issue versus background. Here, I will describe my lab’s efforts to improve contrast via customized contrast agents and photoacoustic imaging. Photoacoustic imaging is a particularly powerful tool that combines the contrast of optics with the temporal and spatial resolution of ultrasound: It is “light in/sound out” as opposed to traditional “sound in/sound out” ultrasound.

My group has developed novel materials and optical excitation sources that improve photoacoustic ultrasound for use in medicine. First, I will describe our work using photoacoustics to guide therapy in treating multidrug-resistant bacteria with plasmonic materials that are responsive to reactive oxygen species upregulated in infection. Second, I will overview our efforts using silica- and melanin-based structures for acoustic cell tracking to understand the fate and engraftment of transplanted cells. Finally, I will describe contrast agent-free translational efforts including in wound care and oral health.

Biography
Jesse V. Jokerst is an Associate Professor in the Department of NanoEngineering at UC San Diego. Dr. Jokerst graduated cum laude from Truman State University (Kirksville, Missouri) in 2003 with a B.S. in Chemistry and completed a Ph.D. in Chemistry at The University of Texas at Austin in 2009. Jesse was a postdoc at Stanford Radiology from 2009-2013 and was an Instructor in that same department from 2013-2015. Jesse started at UCSD in July of 2015, and he has received the NIH K99/R00 Pathway to Independence Award, the NIH New Innovator Award, and the NSF CAREER Award.