

Photoacoustic Imaging for New Insights in Medicine

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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. First, I will overview our efforts using silica- and melanin-based structures for acoustic cell tracking to understand the fate and engraftment of transplanted cells. Second, I will discuss our efforts to build tools for real-time monitoring of heparin anticoagulation therapy and reactive oxygen species using photoacoustics. Finally, I will describe contrast agent-free translational work for wound care and oral health including first-in-man studies.

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 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, the NSF CAREER Award, and Stanford Radiology Alumni of the Year Award. He is currently supported by seven independent federal grants, and serves on the Editorial Advisory Board of *ACS Applied Nano Materials*.