Abstract

Visualizing and characterizing vascular structures is important for many areas of health care, from accessing difficult veins and arteries for laboratory testing, to diagnosis and treatment of cardiovascular disease. Photoacoustic (PA) imaging, one of the fastest growing fields of biomedical imaging, is well suited for this task. PA imaging is considered absorption based, therefore spectroscopic information (information about particular molecules) can be extracted. Yet, unlike purely optical imaging techniques, multiple centimeters of depth can be imaged. Vascular structures, in particular, can be viewed with high contrast using PA imaging, because the absorption coefficient of blood is up to six orders of magnitude higher than surrounding tissues.

Boise State has developed an imaging device that includes a light source and acoustic waves used to create images of structures below a patient’s skin. This is accomplished using PA and laser-ultrasound imaging. Each of these modalities uses non-ionizing radiation and is therefore safe. The benefits of both optical and ultrasound imaging are inherent in this modality, and both spectroscopic and mechanical information can be extracted.

Advantages

- A non-contact, non-invasive system
- Non-ionized radiation is safe to use
- High contrast imaging of vascular structures

Boise State is looking for a Licensee for this technology.

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