Real-Time Fluorescence Lifetime Tracking

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Technology description

Conventional imaging techniques such as magnetic resonance imaging (MRI) and computed tomography (CT) provide surgeons with a great deal of information about a tumor’ s anatomy but cannot distinguish between cancerous and non-cancerous cells. Time-resolved fluorescence spectroscopy (TRFS) has shown promise in the imaging of biopsies of brain tumor, oral carcinoma, and atherosclerosis but currently requires a minimum of several seconds (and up to a few minutes) of off-line fluorescence decay analysis due to the large number of data points collected. While such an approach show-cases the potential of TRFS, it also presents a hurdle which prevents TRFS from being used as a real-time tissue diagnostic tool.
Researchers at the University of California, Davis have developed a novel technique for continuous acquisition, processing, and display of fluorescence lifetimes. This technique allows for rapid and non-invasive real-time tissue diagnosis through a single hand held or biopsy fiber-optic probe. TRFS has been found to be less sensitive to the presence of endogenous absorbers (such as blood) or changes in light excitation collection.
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Additional Information

Application area

Tissue characterization
Diagnosis in: Ophthalmology, cardiology, and oncology

Advantages

Real-time analysis
Rapid and non-invasive real-time tissue diagnosis
Continuous acquisition, processing, and display

Single hand held or biopsy fiber-optic probe
Less sensitive to the presence of endogenous absorbers

Institution

University of California, Davis

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