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Real-Time Fluorescence Lifetime Tracking

Tech ID: 24902 / UC Case 2015-065-0

ABSTRACT

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.

FULL 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.

APPLICATIONS

- ▶ Tissue characterization
- ▶ Diagnosis in: Ophthalmology, cardiology, and oncology

FEATURES/BENEFITS

- ▶ 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

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,422,749	09/24/2019	2015-065
Patent Cooperation Treaty	Published Application	2016/118925	07/28/2016	2015-065

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Fabrication Method for Side Viewing Miniature Optical Elements with Free-Form Surface Geometry](#)
- ▶ [Motor Drive Unit for Combined Optical Coherence Tomography and Fluorescence Lifetime Imaging of Intraluminal Structures](#)

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OTHER INFORMATION

CATEGORIZED AS

- ▶ **Optics and Photonics**
 - ▶ All Optics and Photonics
- ▶ **Biotechnology**
 - ▶ Health
- ▶ **Imaging**
 - ▶ Medical
 - ▶ Software
- ▶ **Research Tools**
 - ▶ Other
- ▶ **Sensors & Instrumentation**
 - ▶ Other

RELATED CASES

2015-065-0

