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

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