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Motor Drive Unit for Combined Optical Coherence Tomography and Fluorescence Lifetime Imaging of Intraluminal Structures

Tech ID: 32510 / UC Case 2020-528-0

ABSTRACT

Researchers at the University of California, Davis have designed a motor drive unit that enables combined fluorescence lifetime imaging and optical coherence tomography of luminal structures.

FULL DESCRIPTION

An Intraluminal Structure is the inside space of a tubular structure, such as an artery or an intestine. Due to the ubiquity and importance of these structures in the human body, it is essential that they can be imaged and monitored for diseases and irregularities. Unfortunately, existing methods for intraluminal structure imaging, such as a gradient index lens or an angle-polished ball lens, are ineffective and unreliable. A method for combining fluorescence lifetime imaging and optical coherence tomography would greatly improve imaging capabilities for intraluminal structures.

Researchers at the University of California, Davis have designed a multimodal intravascular catheter that enables combined fluorescence lifetime imaging (FLIm) and optical coherence tomography (OCT). The catheter consists of a motor drive that performs fluorescence detection and sends the fluorescence signal to a console for data processing and display. This process results in a simplification of the hardware because there is no need to couple the fluorescent light back into a fiber optic, causing a reduction in optical losses and an improvement in FLIm signal quality.

APPLICATIONS

- ▶ Imaging and monitoring in luminal structures, such as arteries and intestines

FEATURES/BENEFITS

- ▶ Some imaging components have been removed, reducing cost and improving reliability compared to existing methods
- ▶ Improved fluorescence signal collected by imaging catheter

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230172443	06/08/2023	2020-528
Patent Cooperation Treaty	Published Application	WO 2021/230978	11/18/2021	2020-528

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Fabrication Method for Side Viewing Miniature Optical Elements with Free-Form Surface Geometry](#)
- ▶ [Real-Time Fluorescence Lifetime Tracking](#)

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OTHER INFORMATION

KEYWORDS

Intraluminal, optical coherence tomography, fluorescence lifetime imaging, intravascular catheter

CATEGORIZED AS

- ▶ **Imaging**
 - ▶ Medical
- ▶ **Medical**
 - ▶ Diagnostics
 - ▶ Disease: Cardiovascular and Circulatory System
 - ▶ Disease: Digestive System
 - ▶ Imaging

RELATED CASES

2020-528-0

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