

# TARGETABLE NIR-I/NIR-II PROBES FOR SAME SITE PHOTON-TRANSPORT IMAGING

Tech ID: 34776 / UC Case 2026-176-0

## PATENT STATUS

Patent Pending

## BRIEF DESCRIPTION

Optical imaging probes and associated methods are provided for generating and analyzing multispectral emission from a target-associated source. To create a highly accurate imaging framework, UC Berkeley researchers have developed a probe that includes an emitter configured to produce two or more spectrally distinguishable emissions from a common target-associated location. Because the emissions originate from a common spatial origin, they provide co-registered signals that enable comparative analysis of wavelength-dependent optical behavior. The system provides critical information regarding attenuation, scattering, image fidelity, optical depth, pathlength, lipid content, collagen or extracellular matrix amount, hydration or edema, stromal or tissue density, hemoglobin oxygenation, and longitudinal tissue remodeling with significantly reduced variability associated with probe distribution.

## SUGGESTED USES

»

Real-time surgical imaging to evaluate tissue density and collagen content during oncological tumor resections

»

Diagnostic monitoring of tissue hydration and edema in patients suffering from chronic cardiovascular or inflammatory conditions

»

In vivo tracking of longitudinal tissue remodeling and extracellular matrix development during regenerative medicine therapies

»

Non-invasive assessment of hemoglobin oxygenation and microvascular blood flow parameters within deep anatomical structures

»

High-resolution laboratory imaging of lipid content and metabolic changes within complex thick-tissue biological samples

## ADVANTAGES

»

Eliminates spatial registration errors by generating multiple spectrally distinguishable emissions from a single, common spatial origin

»

## CONTACT

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## INVENTORS

» Marriott, Gerard Joseph

## OTHER INFORMATION

### CATEGORIZED AS

» **Imaging**

» Medical

» Molecular

### RELATED CASES

2026-176-0

Minimizes data variability caused by uneven probe distribution or unpredictable concentration gradients across different tissue types

»

Utilizes deep-penetrating near-infrared and short-wave infrared wavelengths to optimize signal collection from significant optical depths

»

Combines a cyanine antenna with lanthanide chelates to ensure robust, highly clean, and well-separated optical signals

»

Enables simultaneous multi-parameter tissue characterization including scattering, pathlength, and specific biomolecular tracking from a single scan

RELATED MATERIALS

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

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