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External Link(s)

- [Dr. Nirmala Ramanujam's research website](#)

Optimization of fiber optic probes for spectroscopic measurements

Value Proposition

Early detection of cancer greatly increases the chances for a positive outcome. The World Health Organization states that there are two major components of early detection of cancer: increased awareness and screening. Diffuse reflectance spectroscopy has been proposed as a possible approach to diagnose early pre-cancerous and cancerous changes in cells and tissues, as absorption changes with the presence of various biological molecules. Cancers that have such biochemical distinctions include breast cancer and epithelial cancers, with emerging applications in others. However, current methods in diffuse reflectance spectroscopy are limited because the error for the probe is too great for medical applications, and additionally cannot be used on whole tissues, where it would be most relevant for cancer detection. The enclosed technology addresses these needs with a probe that can measure optical properties of cells and tissues.

Technology

The technology is new geometry to optimize a fiber optic probe for spectroscopic measurement. The novelty of this technology is that it combines spectroscopic measurements with a system to optimize for the optical parameter values used for measurement. This optimization allows for more accurate results in detecting absorption differences, as well as allowing for applications in different cell and tissue types.

Advantages

- Current spectroscopy techniques for cancer detection are not accurate enough to be used for medical diagnoses.
- Current spectroscopy techniques are limited in the cell and tissue types that they can be used in.
- This technology uses a computational method to optimize optical parameters used for detecting absorption, addressing both of these limitations.

