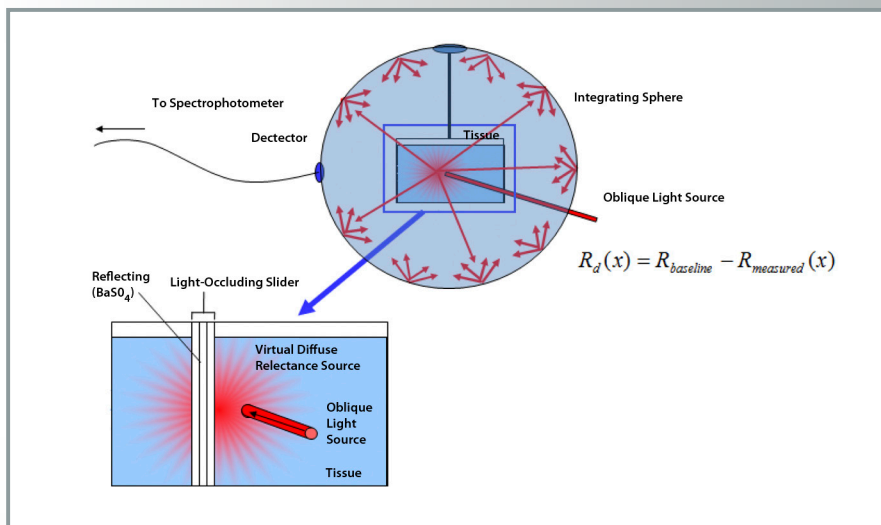


Determining Optical Properties of Biological Tissues

UT-B ID 200802151



Technology Summary

Biomedical optics is an emerging field with enormous potential to diagnose and treat diseases safely and economically. To determine the optical properties of tissue, ORNL researchers invented a new method, apparatus, and software. This invention meets the industry's need for a standardized optical property measurement system that provides accurate sample characterization and does not require costly microtome slicing.

When assessing the optical properties of target tissues, it is especially critical to examine how light interacts with a particular sample. The invention includes a light-occluding slider that permits researchers to calculate and compare diffuse reflectance by area. The properties of the tissue are determined by collecting spatial reflectance data with an integrating sphere. A custom-designed software package controls the apparatus, receives and manipulates raw reflectance data, and converts the data to the optical properties of the sample.

The invention can be used in any biomedical research application where assessment of tissue is necessary. Tissue engineering and bioartificial constructs are among the growing research fields that require functional and structural testing.

Advantages

- Automated method for determining optical properties of biological tissue
- Accurate
- Economical

Potential Applications

- Clinical diagnostics
- Clinical therapeutics
- Tissue engineering
- Surgical transplants

Patent

Justin A. Baba and Brian S. Letzen, *Methods and Apparatus for Determining Optical Properties of Biological Tissues*, U.S. Patent Application 12/436,329, filed May 6, 2009.

Lead Inventor

Justin A. Baba
Measurement Science and Systems Engineering
Division
Oak Ridge National Laboratory

Licensing Contact

Greg Flickinger
Technology Commercialization Manager, Energy
and Engineering Sciences
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.241-9485
E-mail: flickingergc@ornl.gov

