Bachelor Project or Master Thesis Project

Optical properties retrieved from OCT A-scans

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Project description
Measuring the optical properties of a substance is surprisingly difficult. In the context of healthcare, the absorption coefficient $\mu_a$, the scattering coefficient $\mu_s$, and the anisotropy factor $g$ of tissue could potentially be used as biomarkers, i.e., they could serve as indicators for the presence or even the state of abnormalities.

OCT, an optical ranging technique, is sensitive to those optical properties, however, retrieving $\mu_s$ and $g$ from OCT measurements is a yet untackled question. The theoretical framework exists, and this project is about measuring samples of different, known optical properties using a research grade OCT system and applying the existing model to those measurements, to show that extraction of optical properties from simple OCT scans is indeed feasible.

Prerequisites
- Hands-on experimental experience
- Experience in theoretical modelling
- Knowledge on optics
- Knowledge on OCT

Practical details
The lab is located at Risø Campus.

OCT signal of intralipid phantom with difference concentrations

Attenuation coefficient of 1% and 10% intralipid-agarose phantom

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