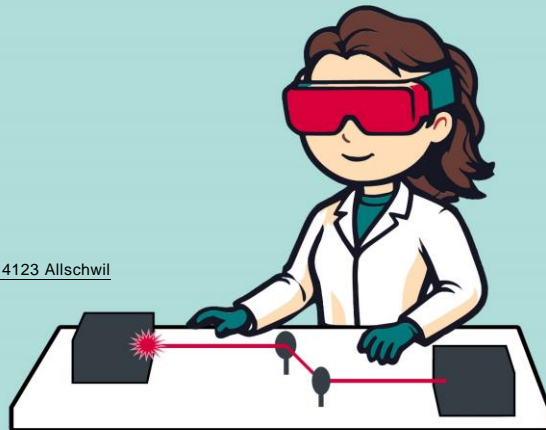




University
of Basel

Department of
Biomedical Engineering

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Master of Science – Biomedical Engineering Thesis Proposal

Spectroscopic approach to identify unhealthy tissues:

Laser-Induced Breakdown Spectroscopy (LIBS) has been applied to analyze a wide array of materials across various fields to identify signatures of materials. Compared to traditional histopathological analysis, tissue analysis with LIBS is less invasive, faster, non-destructive, and offers precise multi-element analysis.

This master thesis aims to use a laser-induced breakdown spectroscopy setup to identify cancerous and healthy tissue by collecting spectra from various tissue types. The following steps describe the thesis:

- Conducting a literature review on the previous spectroscopy studies
- Realizing LIBS experiments on cancerous and healthy tissues
- Working on machine learning algorithms to automate the identification process
- Documentation

Nature of the Thesis

Experimental: 40%

Programming: 45%

Documentation: 15%

Specific Requirements

Background in Physics, Optics. Experience in working with optical systems.
Experience in working with MATLAB or Python.

Supervisor

Dr. Ferda Canbaz (Head of Center for Intelligent Optics)

<https://dbe.unibas.ch/en/research/center-for-intelligent-optics/>

Contact

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