

Development of the fiber-based fluorescence spectroscopic system for optical biosensor based on single walled carbon nano tubes detection.

Background: (Valentina)

Fluorescence spectroscopy (FS) is an optical technique that probes the biochemical composition of tissue by measuring light emitted from fluorophores following optical excitation. FS is highly sensitive to molecular changes and has been widely applied in biomedical applications.

This project aims to develop a **fiber-based fluorescence spectroscopy system** to detect **single-walled carbon nanotube (SWCNT) sensors** beneath living tissue and in *in vitro* models, enabling the monitoring of inflammation-related biomarkers through SWCNT fluorescence.

Task Description:

- Development of the fiber-based fluorescence spectroscopy
- Integration with MEMS scanner
- GUI Development
- Test sensitivity of SWCNT with standard samples
- Test and Validation in ex vivo system

Your profile:

- You are pursuing a master's degree in biomedical engineering, physics, computer science, or a related discipline
- Basic knowledge of optics
- Basic knowledge in analytical chemistry and biochemistry
- Experience in scientific programming (preferably Python)

Supervisors:

Vinamrata Vinamrata (PhD Student)

Dr. Arsham Hamidi

Dr. Valentina Basoli

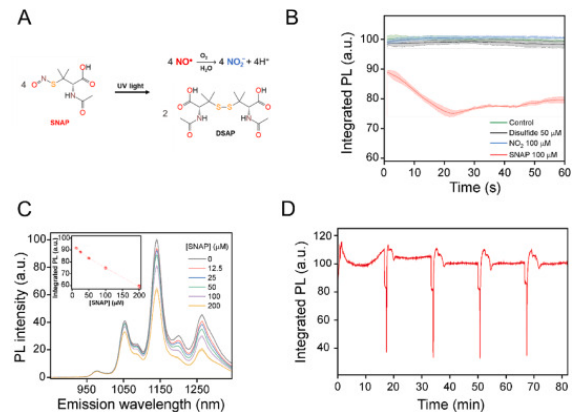


Figure 1 Example SWCNT- NO sensor detection. Zubkovs et al. 2026

Apply to this project by e-mail with subject "MT-1262" to vinamrata.vinamrata@unibas.ch with the following documents:

- CV
- Diplomas and Course Transcripts

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