# PhD Topic Raman Spectroscopic Drug Sensing

The Research Group Biophotonics-Biomedical Engineering currently has a PhD Topic on Raman Spectroscopic Drug Sensing.

The project focuses on innovative Raman spectroscopic techniques for rapid and label-free monitoring of disease biomarkers and drug levels in body fluids. One focus here is on research into signal amplification techniques for the highly sensitive Raman spectroscopy of active pharmaceutical ingredients. An important goal of the project is to enable rapid therapeutic drug monitoring (TDM) bedside at the point-of-care in order to achieve personalized treatment for individual patients. In the future, these developments will enable the efficient treatment of critical illnesses without the risk of treatment failure and without serious side effects.
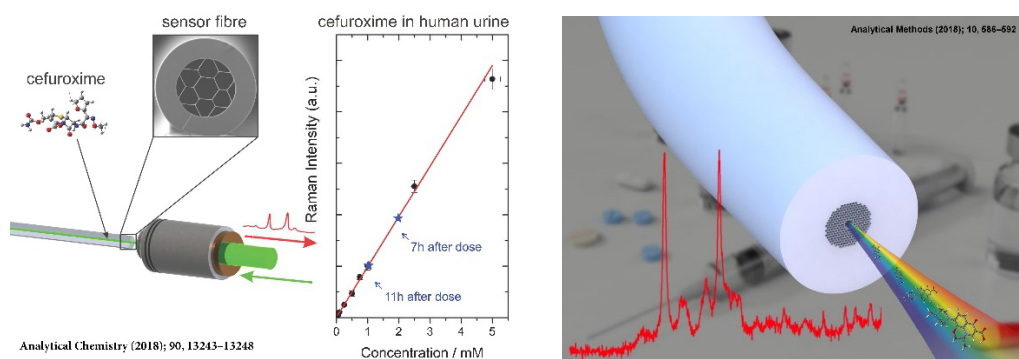
Your knowledge and skills:

- Solid knowledge of optics, photonics, and optical spectroscopy
- Excellent experimental skills in the development and application of new instruments and setups
- Interest in Raman spectroscopy, fiber sensing, molecular spectroscopy, biomedical and instrumental analytics
- Interest in data analysis and programming
- Interest in interdisciplinary research
- Highly motivated and creative individuals with scientific ambition
- Excellent English communication skills, both written and spoken

We offer an attractive research environment with a friendly and active team, excellent instrumentation, and diverse interdisciplinary cooperation opportunities.

We expect the candidate to have a university degree (physics, photonics, engineering, physical chemistry, analytical chemistry or comparable) with very good academic results, to be self-motivated and to work independently on the research tasks.

Start is possible on mutual agreement. Please send your detailed application as a pdf file by e-mail to:
Prof. Torsten Frosch, E-Mail: torsten.frosch@tu-darmstadt.de

Literature:

Clinical Spectroscopy (2023); 5, 100026, 1-7; Analyst (2023); 148, 3057 – 3064; Analytical Chemistry (2023); 95, 12719−12731; Nanophotonics (2020); 9, 19-37; Molecules (2019); 24, 4512, 1-11; Analytical Chemistry (2018); 90, 13243–13248; Analytical Methods (2018); 10, 586–592; ACS Photonics (2017); 4, 138-145; Analyst (2016); 141, 6104-6115