

Institute of Medical Physics and Biophysics
University of Leipzig,
Härtelstraße 16/18, 04107 Leipzig, Germany

Position description: PhD studentship
Physicist/Chemist/Biochemist

Time frame: Duration of the project: 01.01.2023-31.12.2026

Tasks:

Research work in the EU Project HORIZON-CL4 2022 "Platform Optimisation to Enable Nanomaterial Safety Assessment for Rapid Commercialisation":

The work will focus on properties, behaviour and lifecycle of advanced nanomaterials (hybrid nano-carriers, graphene oxide and Q-dots) in complex matrices at sub-micron resolution.

The following issues will be addressed:

- optimization of methodological approaches for the investigation of advanced nanomaterials in biological and environmental fluids, their degradation, aggregation, persistence and biotransformation;
- development of 3D molecule based imaging technique for uptake quantification, monitoring intracellular translocation and trafficking of nanomaterials as well as their co-localisation and interaction with biomolecules in organs, tissues and cells down to the subcellular level..
- spectroscopic based **diagnostic** and **prediction of adverse effects** induced by advanced nanomaterials & drugs

A variety of imaging techniques, such as laser scanning confocal microscopy, confocal Raman microscopy and space resolved ion beam techniques will be used. ATR-FTIR, NTA, DLS, flow cytometry and AF4 coupled with UV, MALS, RI and CRM complement the imaging methods.

Requirements:

- master in biochemistry, chemistry, and physics or in a related programme;
Interest in biophysics, experience in vibrational spectroscopy, fluorescence and ion beam techniques is desirable but not obligatory:
- readiness to become acquainted with cell physiology techniques.

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